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MANUAL TRAINING MAGAZINE

EDITORS
CHARLES A. BENNETT
WILLIAM T. BAWDEN

ASSISTED BY
WILLIAM E. ROBERTS
ARTHUR D. DEAN
FRANK M. LEAVITT

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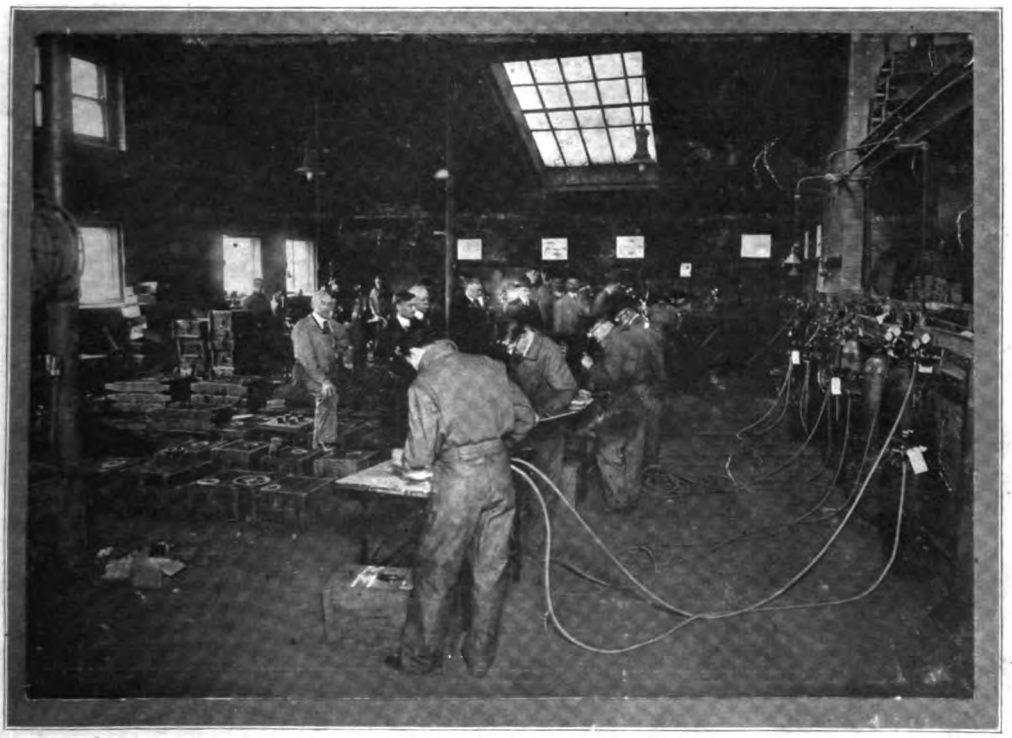

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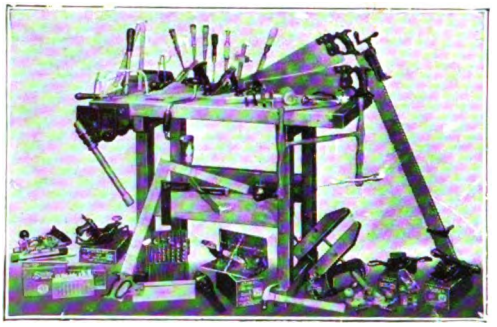

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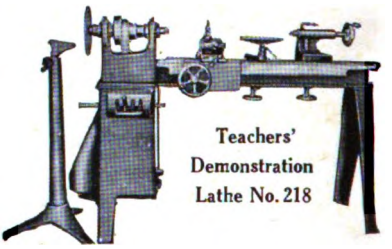
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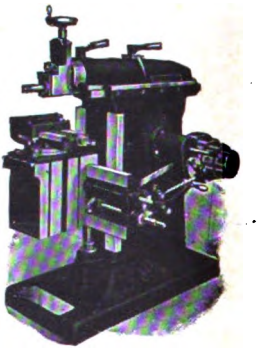

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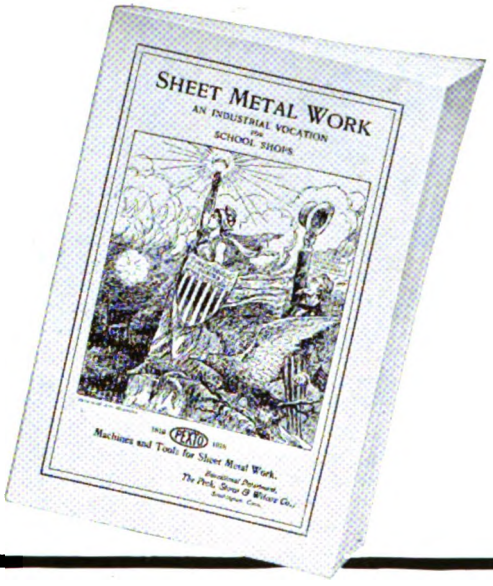

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FIELD NOTES

WHATEVER form of military training shall be adopted in this country at the conclusion of the war, it is quite likely to be accompanied by vocational education to the extent of having vocational education the predominating feature of the plan. This is in line with President Wilson's ideas on the subject, and since it will be an administration measure, one can safely predict something of its nature. A group of specially selected educators and military men are now studying the problem.

Dr. Richard C. MacLaurin, head of the Massachusetts Institute of Technology, who is giving up the direction of that college to devote his time to problems of war training in specialized branches, will assist in outlining the scope of the work to be covered in our after-the-war "universal training."

Dr. F. P. Keppel, dean of Columbia university, now third assistant secretary of war, also is devoting considerable attention to this problem of after-the-war training. Members of the general staff provide the military counsel necessary in framing the program, and outside military experts and educators are being freely consulted.

AROUND NEW YORK

THE New York school system is making a special effort to meet both the needs of commerce and industry and the different branches of the army and navy science.

Ten selected high schools in New York city offer cooperative courses in which 650 students of both sexes alternate weekly between high school and industry. A high school teacher, called a coordinator or "link-up" principal, correlates the work of the school and industry. Special progressive courses based upon the charting of the business of the cooperating firm have been arranged for each type of industry. These 650 students are in employment with 170 firms of the highest standing in various sub-divisions of manufacturing, commerce, and transportation, which offer high school students an opportunity to secure a combination of practical training and business or industrial experience.

During the past year these students earned over $125,000. This amount has been of great help in retaining high school students in school. The cooperative course in New York city has solved many of the perplexing problems in education, both vocational and cultural, and in part, problems of vocational guidance and placement.

Day and evening continuation classes are in session from 8 A. M. to 10 P. M., providing instruction for the waitress, the office boy, the salesgirl, the baker, the mechanic, etc. These classes are housed in school buildings, municipal offices, settlement houses, and in factories, so that the instruction is brought to the door of the worker.

The day continuation classes are divided by Superintendent William L. Ettinger into six types:

Compulsory continuation classes require the attendance of working children who are non-graduates and less than sixteen years of age. During four hours per week these children attend instruction to insure general culture and either prevocational or vocational training, depending upon whether or not the pupils have found their vocation.

Industrial extension classes are practically classes for apprentices in the skilled trades. The subjects taught are shop mathematics, related English, mechanical drawing and the mechanics of the industry.

Commercial extension classes are classes in stenography, typewriting, salesmanship and merchandizing, organized in large commercial establishments and department stores to meet definite needs.

General improvement classes are of a lower grade than the commercial extension classes and are organized in department stores for junior employees.

Improvement classes are classes for civil service employees in secondary school subjects and are given usually in the afternoon from 5 to 6.

Classes are also formed to teach non-English speaking workers English thru the use of the English expressions in the trade.

During the summer months of July and August two of the evening trade schools, Brooklyn Trade School and the Murray Hill Evening Trade School, have conducted classes for men subject to the draft call who wished to equip themselves

(Continued on p. VI.)

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for admission to technical branches of the service in such lines as machine shop practice, electrical work, sheet metal and foundry work, radio and buzzer work, camouflage, airplane work, and automobile mechanics.

The United States War Department requested the New York Board of Education to turn over to them the Harlem Vocational School for the purpose of training 400 enlisted men in technical branches. The enlisted men live in the school and are under military discipline.

Admiral G. E. Bond of the New York Navy Yard has asked the Board of Education to furnish additional classes for the training of civilian apprentices in related trade knowledge. At the present time the Board of Education has organized twenty-one classes for 307 apprentices. It is the desire of the Naval officials to have additional classes for 150 apprentices.

City Superintendent Emeritus Dr. William H. Maxwell in his last report as superintendent of schools, which has been recently published, states that two pressing national needs have been disclosed by the war—more trade schools and more thoro Americanization of foreigners. "The first lesson taught by this war is the need of more trade schools and continuation schools" is the opening paragraph of the report. He says the time is past for the theoretical discussion of the advantages of teaching trades. The stern hand of history has shown us that an untrained people is a people undeveloped economically, physically and morally. There is no room in our country today for those who are not fitted for some definite calling. Our nation needs the intelligent well trained effort of every man and woman within its borders. While some may render this service in the professions or in trained scientific, commercial and other industrial pursuits, the great mass of the people must render it in the various trades. Although we realize that it is a blot upon the honor of a country to have a large percentage of illiterates among the inhabitants, and consequently appreciate the importance of compulsory education and child labor laws, we have not realized, as yet, that it is just as much a matter of reproach to have a large number of persons who can read and write, but who are not fitted for any particular kind of work. Is it not a significant fact that the so-called Industrial Workers of the World consist almost entirely of persons who have no trade? Could such an organization be formed among the skilled workers?"

He continues the discussion by showing that an education for a trade cannot be obtained in a prevocational school that aims to ascertain the prospect's aptitudes. It can only be obtained by thoro concentrated effort in one definite line for a considerable period of time.

Superintendent Emeritus Maxwell recommends the extension and development of a system of trade schools by having many such schools, with full equipment and competent teachers in different parts of the city, so that education for trades may be within the reach of all who deserve it. Of course such schools should be in relationship with the industrial world about them, and thoro cooperative classes and skilled teachers should change and modify their work in harmony with trade needs and practices.

The above statements from the dean of the superintendents of schools, and mentioned many times before by the present superintendent, Dr. William L. Ettinger, shows the decided trend of educational progress.

—William H. Dooley.

WAR WORK IN CITY SCHOOLS

"WIN the War" programs have not been confined to the activities of our adult population nor to special war organizations of young people. Without stressing the grimness of war at all, the schools of the whole country have been so mobilized along constructive lines that every child has felt the thrill of working in a great cause. The following are a few of the cities and some of their activities incident to the times:

Atlanta, Georgia

High Schools—Instruction given on the causes and aims of the war, and the details of preparation, equipment, and transportation; fuel and food conservation emphasized; "Lessons in Community and National Life," prepared by U. S. Bureau of Education, used.

Grade Schools—Each school had patriotic celebration in connection with raising of flag over the building; children recited pledge of allegiance every day and sang patriotic songs; every

(Continued on p. VIII.)

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The Finish Is Important!

SURELY this is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

JOHNSON'S WOOD DYE

Is just the preparation for staining models. It is very easy to use—goes on like oil without a lap or a streak. It is made in 14 attractive shades—which may be easily lightened and darkened. Over the dye apply a coat of

JOHNSON'S PREPARED WAX

This gives a soft, artistic finish of great beauty and durability. It is clean and easy to use and economical—no tools or brushes required—all you need is a cheesecloth rag.

Johnson's Prepared Wax is now made in Liquid form as well as Paste. The Liquid Wax polishes instantly with but very little rubbing.

Write for our booklet on wood finishing. We are glad to furnish it free to Manual Training teachers and pupils.

S. C. JOHNSON & SON,
"The Wood Finishing Authorities"
DEPT, MT., RACINE, WIS.

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class in every school organized into a Thrift Society.

Red Cross Work—High school students secured 3,000 members to Red Cross; 1,700 high school girls, acting as Red Cross unit, made thousands of trench candles, bandages, convalescent robes, etc.

Home Gardens—10,000 older boys and girls definitely set as goal for 1918, $100,000 worth of vegetables in back yard and vacant lot gardens.

Special Classes—Afternoon and evening classes in radio and buzzer operation and automobile engineering for conscripted men; many teachers gave two or three evenings a week to teaching French to soldiers.

Washington, D. C.

Red Cross Work—Junior Red Cross of 25,000 members organized. Students turned over to Red Cross 20,000 Christman stockings, 15,000 tongue depressors, 5,500 splints, 4,000 pin balls, 1,700 scrap books, 250 comfort bags (80 filled), 150 sweaters, 120 needle cases, 300 handkerchiefs, 150 napkins, 100 wash cloths, 12 ambulance robes, 50 crocheted afghans, 12 baby blankets, 50 hospital utility bags, 24 mufflers, 50 helmets, 60 pairs of wristlets, 12 pillow slips, 24 pairs of socks. Junior Red Cross raised $7,750 for materials made up into refugee garments, hospital garments, operating socks, operating masks, etc.

Home and School Gardening—333,000 packages of seeds distributed to school children; 16 school gardens and 16,000 home gardens carried on by children.

Louisville, Kentucky

High Schools—"Lessons in Community and National Life" studied; students in Girls' High School adopted 4 French orphans; heatless and meatless days observed in domestic science classes; war-time recipes stressed.

Red Cross Work—Each school organized as a branch of the Junior Red Cross; manual training classes made the packing boxes for shipping materials abroad, also made canes, crutches, bed tables, etc.; girls made comfort bags and garments for Belgian and French orphans; smaller children made wash cloths, scrap-books, joke books, and wove small squares from which blankets for soldiers were made.

Special Classes—Morning, afternoon and evening classes in wireless telegraphy for drafted men; a night school for working men where shop practice, machine shop work, electric wiring, drafting, etc., are offered; two night schools offering academic and commercial work; and one industrial night school for colored pupils, which includes courses in sewing and cooking, forge work, wood work, automobile work, etc.

Indianapolis, Indiana

High Schools—"Lessons in Community Life" used; conservation measures advocated by Government fully observed in household arts department; work in civics and history organized around the duty of public spirited citizens to State.

Special Courses—Course in agriculture organized in technical high school to prepare boys for work on farms. Evening schools offered special vocational courses for training workers for various kinds of technical work connected with war projects.

Richmond, Virginia

Special Classes—(a) War emergency classes in radio and buzzer work, gas engine construction and repair, map drawing, mathematics, and conversational French for drafted men. (b) Class for training telegraph operators conducted thru cooperation of Western Union Telegraph Co. (c) Night class in theory of banking composed of women employed in banks during day time who will take places of men called to war. (d) Eight weeks course in elements of general office work for women. (e) Number of schools were used after school hours as centers for demonstrations and classes in food conservation.

Portland, Oregon

Special Classes—(a) Night school courses in pipe bending and caulking for workers in shipbuilding yards. (b) Radio class for drafted men. (c) Special classes for teaching metric system to nurses going to France and others interested.

Home and School Gardening—Last year there were 6,000 home gardens cultivated by school children and 33 school gardens, covering a total of 216 acres, cultivated. The present year this work has been greatly extended and additional garden supervisor employed.

(Continued on p. X.)

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As Good As the Catalog Describes Them

Truth in advertising demands that the printed word shall not even exaggerate the article described, although many manufacturers still hold that a little "poetic license" in description is permissible in business.

The Kewaunee Book, like **Kewaunee Furniture,** is straight realism. There is no veneer on either. A recent letter from a discriminating School Executive says that **"it gives one pleasure to find that the articles ordered are as good as the catalog describes them."**

The Kewaunee Book, by the way, will interest School Executives. It pictures and describes what we believe to be the only truly "scientific" line of Manual Training Furniture manufactured in America today.

KEWAUNEE SPRING BOLT TOP CONSTRUCTION IS SPECIALLY PATENTED

Chicago General Sales Office,
460 E. Ohio Street

Kewaunee Mfg. Co.
LABORATORY FURNITURE EXPERTS
KEWAUNEE, WIS.

New York Office,
70 Fifth Avenue

Branch Offices:
Columbus Atlanta Dallas Kansas City Spokane Baltimore
New Orleans El Paso Minneapolis San Francisco Little Rock Denver

United States Employment Service
U.S. Dept of Labor W.B. Wilson Secy

The Right Men in the Right Jobs Will Win the War

The true American wants to work where he will help win the war. He wants to fit in. America needs the Right Men in the Right Jobs. Only when this comes about can maximum production be obtained to support our armies at the front.

The U. S. Employment Service is the official bureau of the Federal Government in charge of the distribution of labor. The President has declared that it is the official agency for recruiting and distributing unskilled labor for war work.

It has over 500 branches throughout the nation, and 20,000 U. S. Public Service Reserve enrollment agents. Ask the local post office or newspaper for name and address of the nearest representative, or write to the U. S. Employment Service, Washington, D. C.

These employers in war work who seek to get labor through their own or private recruiting agencies are interfering with the Government's machinery and preferring their interests to those of the nation. Only through strict compliance with the Government's program can the constant, restless shifting of labor from one war job to another, with the consequent diminution in production and efficiency be prevented.

Any man not engaged in war work should put himself at the disposal of the nation by registering with the Public Service Reserve. This is a tremendously important duty! The war worker ranks with the fighter in the trenches. He will help beat the Hun.

Contributed through
Division of Advertising

United States Government
Comm. on Public Information

This space contributed for the Winning of the War by
The MANUAL TRAINING MAGAZINE, - Peoria, Illinois

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Poultry—Manual training supervisor planned to have at least 1,000 backyard chicken houses and many rabbit hutches for raising of chickens and rabbits to increase supply of meat and eggs.

Cincinnati, Ohio

High Schools—(a) Art department made posters to help campaigns for food conservation, sale of War Savings and Thrift Stamps, and Junior Red Cross Work. (b) Printing department issued edition of 5,000 copies of President's message and addresses dealing with the war for use in high schools and eighth grades. (c) Material issued by Committee on Public Information used as part of regular work.

Red Cross—Red Cross work in general was stressed in every possible way by (a) correlating with regular classroom lessons in hygiene, history, geography, etc.; (b) working upon all manual activities within their ability in preparing supplies for the soldiers and their homeless families.

Home and School Gardening—More than 10,000 pupils actively engaged in this work.

Special Classes—School for telegraphy and radio instruction in continuous session for past year; school buildings in charge of home economics teachers kept open during summer for food conservation work.

Los Angeles, California

The war activities of the schools of Los Angeles are described in a pamphlet published by the school authorities of the city. The pamphlet treats of ethical instruction during the war, training of workers for the war, increasing and conserving food supplies, making products, salvage, art posters and announcements, civilian relief, Liberty Loans, drive for Thrift Stamps, cash contributions from the schools, cooperation with other Government bodies with public and semi-public organizations. It was resolved to limit direct cooperation to organizations bearing official government sanction and approval. They have clerical records to show the work accomplished.

Hartford, Connecticut

Every school had a working Junior Red Cross which reached about 1,000 pieces a week. The upper grades filled out blanks for the draft and exemption boards. The school halls, especially the high school halls, were open for various sorts of meetings connected with the war. The schools being open on heatless Mondays, there were afternoon classes of men and women from the shops. Special attention was given to Americanization.

DR. SPAULDING GOES TO FRANCE

Dr. F. E. Spaulding, superintendent of schools in Cleveland, Ohio, has been appointed for service in France as head of the Army Educational Commission of the Y. M. C. A. In speaking of his work, Dr. Spaulding said: "While the war continues, chief attention will be given to the teaching of French and other subjects which will help the men to become better fighters, and to instruction in the government and ideals of America and her allies.

"The greatest work will come after the fighting ends, during the months that will be occupied by peace negotiations and by demobilization of troops. Then definite vocational training will be offered, including courses in industry, business and even medicine and law. Men who have never had any schooling will be taught to read and write. Those who interrupted college courses to enter the army may continue their studies. "Our aim will be to fit the soldiers to earn a better living and to be happier and more valuable citizens when they return to peace-time occupations. Attendance probably will be made compulsory after the war. Our plan has been approved by General Pershing and his staff, and we have been promised the army's help in our work."

Dr. Spaulding will have Professor John Erskine, of Columbia University, as associate in this work. For the present, instructors will be drawn from men already in the Army in France. The Y. M. C. A. is financing the undertaking, and Dr. Spaulding has been assured that ample funds will be furnished.

RE-EDUCATION

In the passage of the Smith-Sears Bill, Senator Hoke Smith, of Georgia, has again won distinction as chairman of the senate educational committee. Both the Smith-Hughes Bill and the Smith-Sears Bill are open-doors of vocational opportunity to the people of a great democracy. The Smith-Sears Bill provides for such re-edu-

(Continued on p. XIV.)

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MAYDOLE HAMMERS

Adze Eye Nail Hammer | Machinists' Hammer | Blacksmiths' Hammer | Coppersmiths' Hammer | Adze Eye B. F. Hammer

JUST A FEW OF OUR HAMMERS

All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request.

THE DAVID MAYDOLE HAMMER CO. NORWICH, N.Y.

Stanley Tools

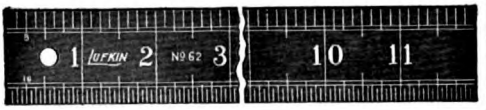
Stanley "Bed Rock" Planes

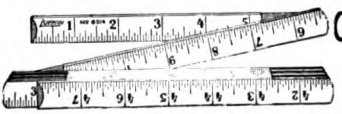
The ease and accuracy with which the student can adjust these Planes for a wide or narrow throat opening make them ideal tools for Manual Training use.

Our special "Bed Rock" circular will prove of interest to both teachers and scholars.

STANLEY RULE & LEVEL CO.
NEW BRITAIN, CONN. U.S.A.

LUFKIN





STEEL and WOOD RULES - - MEASURING TAPES
Complete high grade lines

On Sale Everywhere Send for Catalog SPECIFY— LUFKIN

THE LUFKIN RULE CO. Saginaw, Mich. New York No. 105-110 Lafayette St.

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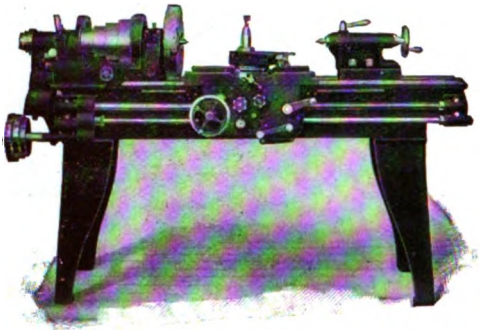
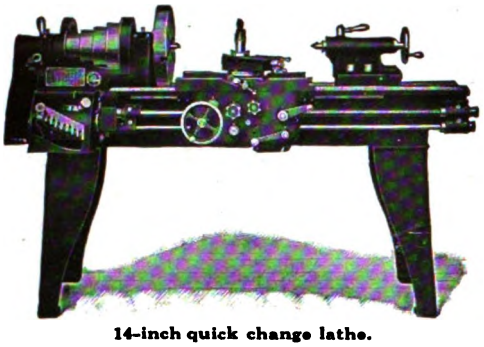
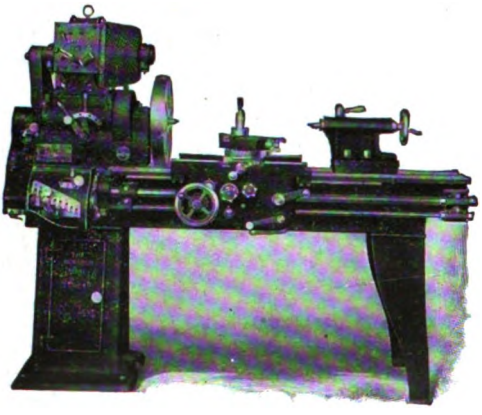


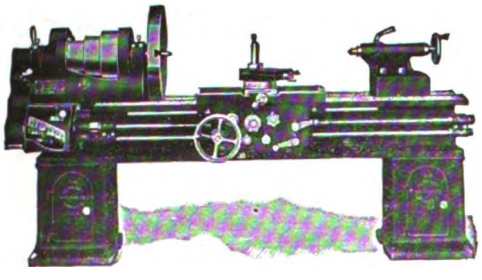
14-inch MONARCH standard lathe.



14-inch quick change lathe.



16-inch Motor driven geared head.



20-inch MONARCH lathe.

MONARCH LATHES

from 14 to 20 inch swing

offers the ideal lathe for the manual training school. They are furnished in any style and with practically all attachments desired.

MONARCH lathes are low in price yet are as accurate as the highest priced lathes. By installing **MONARCH** lathes you can in many instances put in **two MONARCH** lathes for the same cost as **one** of the high priced lathes.

MONARCH lathes are in use in many factories and tool rooms with lathes costing almost twice as much doing just as much and as accurate work.

It is not necessary to pay a high price to secure a good engine lathe.

Let us send you our catalog and list of manual training schools using the Low Priced **MONARCH** lathes.

THE MONARCH MACHINE TOOL CO.

SIDNEY, OHIO

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VOLUME XX No. 1

MANUAL TRAINING MAGAZINE

SEPTEMBER, 1918

TRAINING THE FIGHTING MECHANIC

WILLIAM T. BAWDEN

Specialist in Industrial Education,
U. S. Bureau of Education, Washington, D. C.

AS ONE phase of its operations in the business of making war, the Army is engaged in an enterprise of the greatest significance to education. The making of a soldier in a twentieth century democracy is a far more complicated problem than any drill master had to face before. In addition to those qualifications of military discipline and skill and physical endurance which have always been recognized as essential, the modern army must provide in its personnel for high standards of general intelligence, special scientific knowledge, and a wide range of technical and mechanical skill. War is now a contest of science, engineering, and mechanism, as well as of strategy and physical prowess.

REALIZING THE NEED

The experience of three years of war in Europe demonstrated beyond question the need of large numbers of skilled mechanics of all kinds. To provide the necessary transportation calls for men who can build, equip, maintain, and operate steam and electric railroads. The use of the gas engine in motorcycles, automobiles, trucks, tractors, and airplanes demands soldiers with special mechanical skill. Modern methods of communication by telephone, telegraph, and wireless call for another group of skilled men. Just to list and to describe briefly the mechanical and technical needs of the Army requires a good sized book.

After the United States entered the war, groups of educators and others spent some time in Washington urging upon the authorities the importance of prompt and energetic action looking toward the creation of an adequate supply of trained mechanics, in order that they might be available when needed. It was agreed that the men would be needed, but no action was taken.

Apparently the reasons for the delay were threefold: (1) The raising of an army of unprecedented size, in an incredibly short space of time, with a minimum of disturbance of commerce and industry, practically absorbed the available directive energy in the accomplishment of what was immediately imperative. Some things could wait. (2) Those who were responsible for the discipline and morale of the new army hesitated to run the risk of diverting the attention of the men from the main business of learning to be soldiers in order to learn to be mechanics. (3) There was perhaps the belief that mechanical skill and resourcefulness are sufficiently widespread among our young men so that the operation of the draft

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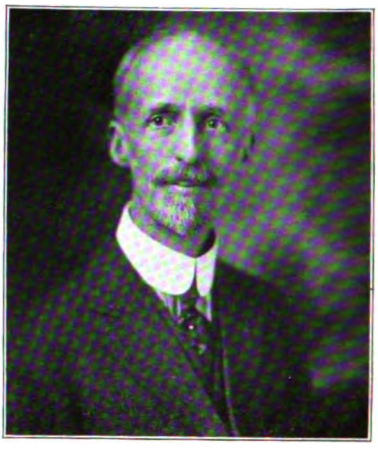
COL. REES

ROBERT I. REES, Col., General Staff Corps, U.S.A., chairman of the Committee on Education and Special Training, is a native of Michigan, and a graduate of the Michigan School of Mines, Harvard University, and the New York Law School. His military experience has been in the infantry. Served as 2d Lieutenant in the Spanish-American War, and thru the Philippine Insurrection from 1899 to 1902. Later he graduated with distinction from the Army School of the Line, Ft. Leavenworth, Kansas, and from the Army Staff College, at the same post. In 1910 he served in the Mindanao campaign, with the rank of Captain. He also served two years in Alaska. In September, 1916, he was promoted to the rank of Major in the regular army, temporary Lt.-Colonel in August, 1917, and Colonel on July 30, 1918. He has served on the General Staff since June 4, 1917. (Photo in 1916, rank of Capt.)



DR. MANN

CHARLES R. MANN, chairman of the advisory board, received the bachelor's and master's degrees from Columbia University, New York, and the Ph.D. degree from the University of Berlin. From 1896 to 1914 he was connected with the physics department of the University of Chicago. From 1914 to 1918 he directed the investigation for the joint commission on engineering education of the National Engineering Societies and the Carnegie Foundation for the Advancement of Teaching, writing the report, A Study of Engineering Education. Since 1918 he has been professor of education and director of educational research, Massachusetts Institute of Technology, Boston, Mass. He is author of a number of textbooks on physics and optics.

would bring in all the skilled mechanics needed in the early stages.

As the plans began to develop, however, and especially after the arrival of the first units in France, the demand for action became more pressing, and the need of formal provision for training skilled mechanics of various kinds was officially recognized.

ORGANIZATION OF THE COMMITTEE.

It was decided to offer special technical courses to certain units of enlisted men as a part of their preparation for military duties. To devise plans for the accomplishment of this purpose, and to direct and supervise their operation, the Secretary of War has appointed a Committee on Education and Special Training, consisting of: Col. Robert I. Rees, General Staff Corps, chairman; Lt.-Col. John H. Wigmore, Provost Marshal General's Department; Major Wm. R. Orton, Infantry; Major Grenville Clark, Adjutant General's Department, Secretary. An advisory board representing educational interests was appointed also, including: Prof. James R. Angell, University of Chicago; Dr. S. P. Capen, U. S. Bureau of Education; J. W. Dietz, president, National Association of Corporation Schools; Hugh Frayne, general organizer, American Federation of Labor; Dr. Charles R. Mann, Massachusetts Institute of Technology; Dean Herman Schneider, University of Cincinnati; Dr. R. A. Pearson, Assistant Secretary of Agriculture.

The committee and advisory board were first appointed early in February, 1918, and immediately set about studying the situation and preparing plans. On February 15th

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MR. DIETZ

J. W. DIETZ, secretary of the advisory board, is a graduate of Purdue University in electrical engineering. From the University he went directly to the enginering department of the Western Electric Co., where he was engaged in special work on telephone equipment in the New York office. For the past seven years he has been director of the Company's educational activities, with headquarters at the Hawthorne plant, Chicago. He is president of the Hawthorne Club, comprising a membership of about 3,000 employes of the Company, in general charge of social, recreational, and educational activities. He is vice-president of the Vocational Education Association of the Middle West, and in 1917-18 was president of the National Association of Corporation Schools. Last year he assisted the Committee on Classification of Personnel in establishing its local centers of operation in the army camps in the Southwestern District.

MR. DOOLEY

C. R. DOOLEY, educational director, is a native of Indiana, and a graduate of Purdue University, in electrical engineering. After graduation he entered the employ of the Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa., in the engineering department, where he served two years on electrical tests in the shops, four years on engineering design, one year on technical writing and publicity work, and nine years as educational director. The work for which he is best known is the organization and direction of the Casino Technical Night School. He is a member of the board of directors of the National Association of Corporation Schools.

the committee appointed a civilian educational director, Channing R. Dooley, director of education, Westinghouse Electric and Manufacturing Co., Pittsburgh, Pa. The military administration is under the immediate charge of Captain C. H. Briscoe, Executive Officer.

OUTLINE OF THE PLAN

The War Department is not organizing new schools, but is utilizing institutions already in existence which have the necessary facilities. Men are assigned to institutions in units of 200 to 2,000, known as *National Army Training Detachments.* They are housed and fed at the several institutions under conditions of military discipline. Military drill is a regular part of the daily routine. The institution is compensated at an agreed rate per day per man, which is intended to cover actual costs.

The initial assignments of men began work on April 1st. By May 1st there were approximately 7,500 men in training in 23 institutions. On August 1st there were approximately 40,000 men in training in 140 institutions. By November 1st it is expected that over 100,000 men will have received instruction. By the close of the fiscal year, June 30, 1919, it is estimated that this number will have been increased to approximately 300,000.

The training is given in short intensive courses of two months each. Allowing for Sundays, holidays, and Saturday half-holidays, the net number of working days is approximately 50 for each detachment.

The working day consists of nine hours, of which three are devoted to military drill, and six to technical and trade training.

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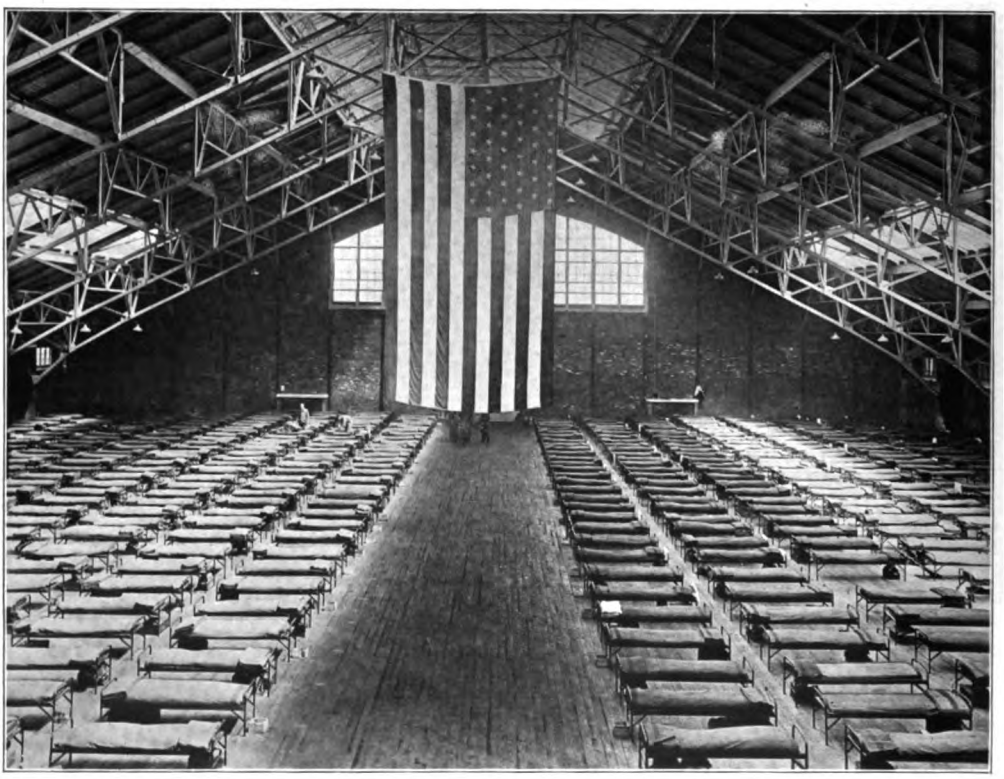
Courses of instruction have thus far been provided in about 25 different mechanical trades, selected from among those for which there is the greatest immediate need in the army. These include auto driving and repair, carpentry, electrical communication and repair, blacksmithing, autogenous welding, machine work, sheet metalwork, and others.



1. TWO DIFFICULT PROBLEMS HAVE BEEN TO FIND CONVENIENT AND SUITABLE FACILITIES FOR HOUSING AND FEEDING THE MEN. LACK OF ONE OR BOTH OF THESE ESSENTIAL FEATURES EXPLAINS WHY THE WAR DEPARTMENT CAN NOT USE A NUMBER OF OTHERWISE WELL-EQUIPPED INSTITUTIONS. AT PURDUE UNIVERSITY, LAFAYETTE, IND., THE ARMORY WAS TURNED INTO A BARRACK.

THE ARMY POINT OF VIEW

The Committee has sought to impress upon the cooperating institutions the importance of keeping in mind at all times the fact that the army is training soldiers. The army is primarily an organization of soldiers. In discussing this point, Major Clark said, in addressing a conference of the district educational directors:

The army is not a collection of skilled mechanics, and never will be. These men are to be given as much special training as is possible in the eight weeks, but they are going to be soldiers, first, last, and all the time.

From the army point of view, the development of military discipline and mastery of the duties of the soldier must not be sacrificed in order to give technical training. In other words, we must demand that these men be as far advanced in military drill at the end of three months (I will not say two months) as other men who have been sent to the camps.

The whole scheme must stand or fall on our ability to *add to the efficiency of the soldier.*

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IDEALS OF THE COMMITTEE

From the beginning the Committee has believed that the desired results can not be accomplished by arm-chair methods or by listening to interesting lectures about things. It has insisted that this be a real exemplification of "learning by doing." The doing is accompanied by a sufficient amount of

One suggestion as to method of procedure is of special interest. Instructors are advised to adopt "a promotion program in preference to a rotating one."

By a rotating plan is understood one in which the course is divided up into units, and each man is expected to spend a prescribed amount of time on each unit. By

2. AT THE NOON HOUR, WHILE THE SOLDIERS ARE MARCHING AWAY TO MESS, WE LOOK IN AT THE GAS ENGINE LABORATORY, AT THE UNIVERSITY OF PITTSBURGH. SOME OF THE ENGINES ARE CONNECTED READY TO RUN, WHILE OTHERS ARE COMPLETELY DISMANTLED. THE SOLDIERS HAVE LEFT THEIR WORK UNIFORMS ON THE BENCH.

informational and theoretical material to make the man intelligent about what he does—but he must be able to "do" it.

The Committee has wisely taken the position that the educational institution which is able to pass the careful inspection is capable of tackling this job intelligently and effectively. It has regarded its function as primarily that of setting forth clearly and definitely the goal to be reached, and the tests which must be met, in the expectation that the institution will exercise some originality and initiative in meeting the requirements.

a promotion plan is understood one in which the course is divided up into units, ranging from the simplest to the most difficult; each man starts on one of the simpler units, and is promoted to more difficult units only after showing, or developing, ability on the unit assigned.

To illustrate: In the auto-mechanics squad only those men who have thoroly mastered the details of axle and wheel work will progress to engine work, and then again only those who show a good understanding of engine construction will take up further study of gas engine performance. Again, only those who show special all-round ability in these things will pro-

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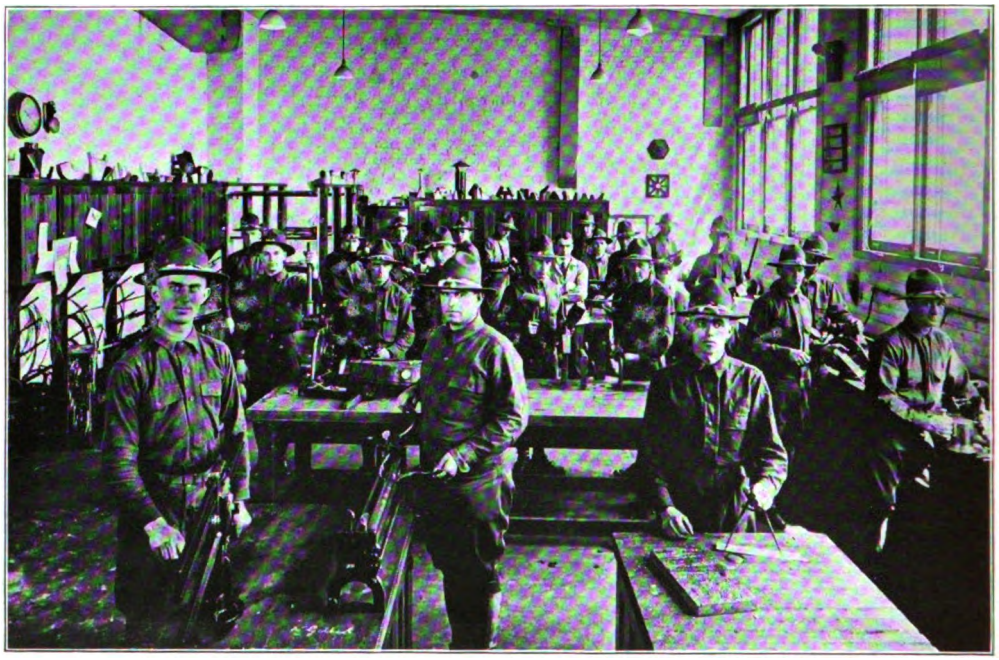
ceed further with the study of ignition, timing, and the more complicated details of operation.

The Committee recognizes certain administrative difficulties in the application of this method, and the impropriety of contending that in any given course there is but one point or one process at which the men should start. A little study, however, will show the advantages of this procedure as a general method, especially in the matter of rating the students at the conclusion of the course. Each man can be rated on the number of progressively difficult units which he has completed satisfactorily, with the approximate amount of time required for each. This will give a more accurate and illuminating statement of what he has accomplished and can do, than is given in a report that he has spent a certain amount of time on each of several units with varying degrees of proficiency.

Furthermore, from the army point of view, it is held that it is better for the man of average attainments, or less, to devote his time to a few processes which he can master thoroly than to attempt to cover a larger amount of ground without becoming proficient in any part of it.



3. THE WAR DEPARTMENT IS MAKING USE OF SOME OF THE TECHNICAL HIGH SCHOOLS. THIS CLASS IN SHEET METALWORK IS IN THE HARRISON TECHNICAL HIGH SCHOOL, CHICAGO.

MAKING GOOD ON THE JOB

The cooperating institutions include practically all types of school having suitable technical facilities: state universities, such as Texas and Wisconsin; municipal universities, such as Pittsburgh; technical high schools, such as those in Buffalo, Chicago, St. Louis; private schools, such as Wentworth Institute, Boston, Mass., Ranken Trade School, St. Louis, Rahe Auto School, Kansas City. But in all cases the job is the same—to train fighting mechanics.

By August 1st the courses of instruction had been in operation for four months, and

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while it is too early to draw final conclusions, there is evidence available already to indicate that the plan is regarded as a success.

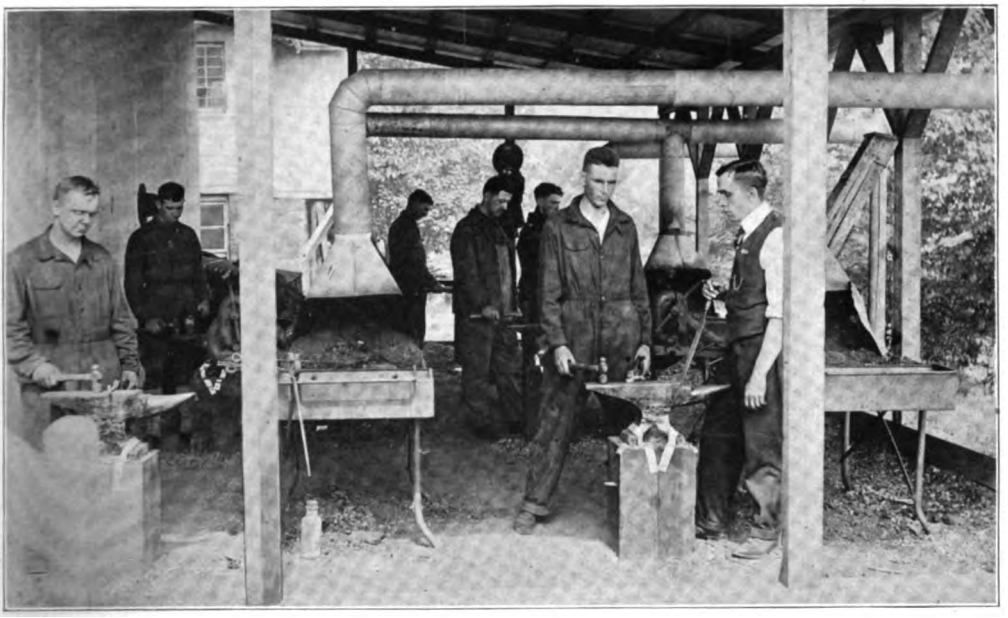
On the one hand, the graduates of the early courses have been subjected to the trade tests prepared by the Army Committee on Classification of Personnel, and have made a very creditable showing. Instructors have been uniformly surprised at the progress made by the men, and the spirit of enthusiasm pervading the work. One shop instructor reported to his director that these men in three weeks had covered as much ground as the students he was accustomed to teach usually accomplish in the regular school year, and had done the work more thoroly.

On the other hand, the almost universal testimony of officers is that these men after two months in the schools have made approximately as much progress in military drill and tactics as is made by the men who have been in the cantonments two months presumably giving their entire time to military drill.

At one institution it so happened that rifles were not provided until the last week of the two months course, so that the men had been obliged to drill with improvised substitutes. Nevertheless a dress parade was ordered for the final day, which was witnessed by an army officer from a neighboring cantonment. At its conclusion the officer was enthusiastic in his praise of the snap and precision with which the soldiers went thru the manual of arms and the tactical formations. He is reported to have said:

> I have had the biggest surprise of my life. This is a remarkable performance. I did not believe it was possible to accomplish so much in eight weeks, and I would not believe it now if I had not seen it with my own eyes.

It is too much to expect that young men drawn at random from the civil population can be transformed into either finished sol-



4. AT NEW YORK UNIVERSITY, NEW YORK CITY, THE CARPENTRY CLASS ERECTED A TEMPORARY OUTDOOR ADDITION TO THE BLACKSMITH SHOP, IN WHICH THE FORGES AND SMOKE PIPES WERE INSTALLED BY THE BLACKSMITH CLASS.

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diers or skilled mechanics in two months. This is not the aim. It was believed, however, that this time is sufficient, by the use of carefully planned and intensive methods, to cover the initial stages of a limited number of mechanical trades in such a way as to make the men definitely useful and potentially indispensable, and at the same time to lay the foundations of the essential military discipline and drill so effectively that the making of soldiers may proceed with substantially no loss of time. The experience of four months indicates that this belief was justified, and that this dual aim is being measurably achieved by means of the schools for the training of the fighting mechanic. The record, therefore, is a gratifying one, notwithstanding there still remain numerous problems to solve and numerous objectives to attain.

5. THE CARPENTRY CLASS AT NEW YORK UNIVERSITY ERECTED THIS STANDARD MOBILIZATION BARRACK. THE BUILDING CONTAINS ABOUT $400 WORTH OF MATERIAL, AND WAS COMPLETED IN SIX WORKING DAYS, BY TWENTY MEN, ONLY ONE OF WHOM HAD DONE ANY CARPENTRY WORK BEFORE.

SIGNIFICANCE OF RESULTS ACHIEVED

The methods employed and the results accomplished in this vast undertaking are of the greatest interest to educators, and especially to the student of industrial education. More than this, they are of the greatest significance in the development of industrial education in this country. A few points for further special study may be noted briefly:

1. More than one school head has said in substance: "This work has been a revelation to me and to all my teachers. The results have exceeded anything with which we are familiar in our regular school experience. The work in this institution will always be different hereafter as the result of what we have learned in the conduct of these classes." Those who have been in close contact with this work have conceived new ideals of methods of instruction, of school and class organization, and of standards of achievement.

2. There are indications that speed and working under pressure are important elements in the methods which have produced these remarkable results. There are those

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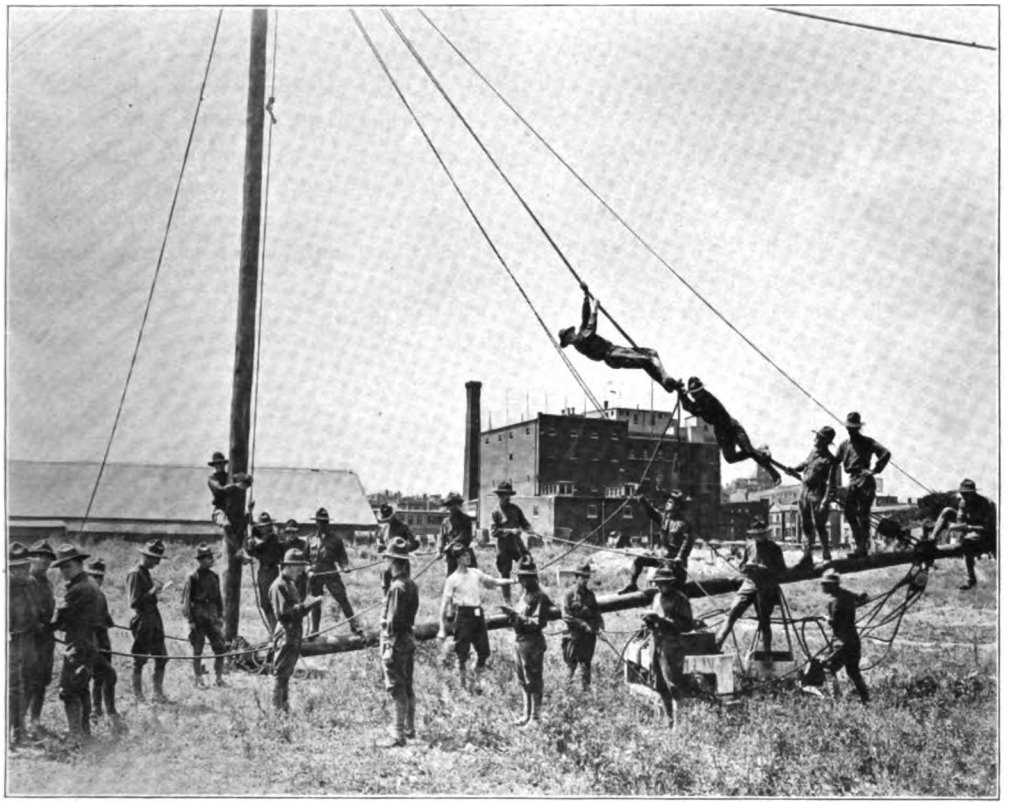
who hold that the explanation is to be found principally in the schedule—six hours per day for eight weeks of intensive application. This should produce results in any field of endeavor. The difference between this and tinually on the job. The man must *accomplish* something, not simply *learn* something. *(c) Combination of the military element with the school and the industry.* The military organization demands results, places



6. RIGGING IS ONE OF THE TRADES IN WHICH IT HAS BEEN DIFFICULT TO FIND AS MANY SKILLED MEN AS ARE NEEDED. THE MEN IN THIS CLASS AT WENTWORTH INSTITUTE, BOSTON, MASS., ACQUIRED GREAT SKILL AND FACILITY IN ERECTING AND HANDLING DERRICKS, SHEAR LEGS, GIN FOLDS, AND THE LIKE, AND IN RAPIDLY MOVING HEAVY MACHINERY AND MATERIAL FROM PLACE TO PLACE.

one or two hours per week spread out over two to four years tells the whole story. To what extent is this the correct interpretation?

3. All of the factors that account for the high standards of achievement have not yet been fully analyzed, but, as Dr. Mann tentatively suggests, they include at least the following: *(a) Reality of the motive*—the man is "doing his bit," serving his country. *(b) Reality of the job*—the emphasis in con- the responsibility on the individual to "deliver the goods," and accepts no excuses. *(d) Reality of the test*—the test that has to be met is one of performance; it is objective. The result of the man's efforts is not something capable of various interpretations and explanations, but appears in definite and tangible form.

4. The careful supervision insisted upon by the Committee has emphasized the fact that to train the fighting mechanic requires

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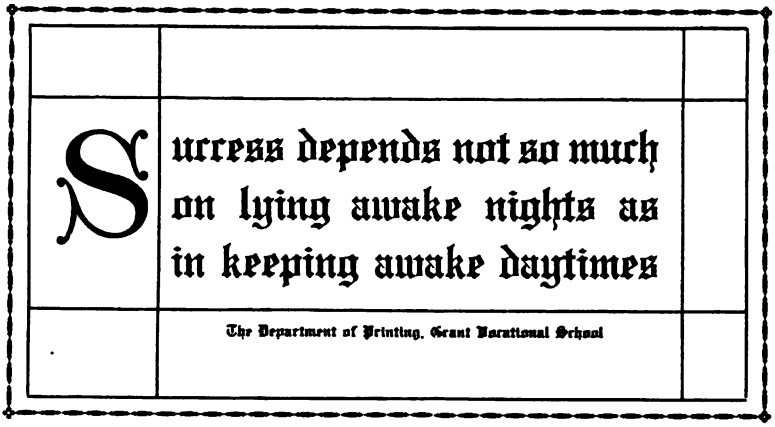
something more than mere production. The term "factory methods" has been bandied about a good deal in recent discussion of industrial education, and by some has been interpreted in a very narrow fashion.

A framed structure may be erected by a carpentry class according to factory methods in such a way that only a few individuals who already possess some skill or aptitude are permitted to undertake the difficult parts of the work, while the others put in their time nailing down floors or nailing up lath, and the like. Such methods, and the results accomplished by them, will not meet the War Department inspection, nor turn out men who can do the job that must be done.

A GREAT OPPORTUNITY

There are many lessons to be learned from the work now under way in these Army training schools. Methods and conclusions which are here worked out should be utilized in other types of school wherever applicable.

In the study of these schools for training the fighting mechanic, directors of industrial education and their instructors, as well as teachers and supervisors of manual training, have at hand a wonderful opportunity to gain new ideas, new inspiration, and new ammunition with which to carry on the struggle for higher standards and greater efficiency in their work.


Success depends not so much
on lying awake nights as
in keeping awake daytimes
The Department of Printing, Grant Vocational School

Design by E. Ewing Bacon Jr.

A PRINTING PROBLEM AS WORKED OUT BY A PUPIL IN THE GRANT VOCATIONAL SCHOOL, ST. JOSEPH, MO., UNDER THE DIRECTION OF RALPH W. POLK.

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HOW I STARTED MY GRAMMAR GRADE BOYS LAST YEAR.

FIFTH ARTICLE

THIS series of articles on grammar grade wood-working and mechanical drawing has aroused a great deal of interest among teachers of manual training. It has revealed the fact that there are many and varied methods and devices used among manual training teachers. It has given each reader a chance to compare the methods presented with those in use in his own classes. We hope it has caused him to think more seriously than ever before concerning this whole subject of selection and presentation of the subject-matter of the manual arts.

The beginning of a new school year seems an appropriate time to re-read the four articles published last year. They will be found in the following issues: December, 1917, February, March and May, 1918. In future issues we expect to complete the series and then add two or more summaries giving the points of view of experienced supervisors.—The Editors.

THIS seventh grade class, with the exception of one or two boys who had transferred from other schools, had manual training in the fifth and sixth grades, and therefore knew what was expected of them in the way of discipline.

The school program is arranged so the class comes for a period of seventy-five minutes once a week. Ten minutes of the first period was taken up with organization, assigning of benches, taking names, appointing monitors, explanation of what each pupil was to furnish, etc.

By having a monitor for each tool—tee-squares, triangles, pencils, drawing tools, etc.—all were passed in about two minutes, and pupils were ready for work. After a brief explanation as to care and use of drawing tools, the pupils were told to put the 9″x12″ drawing paper on the drawing-board and were then instructed to place the margin on the paper as they did last year, 1½″ from the left edge and ½″ from the other three edges.

After deciding on the project we were going to make, a book-rack, a few words of explanation from me made every boy eager to proceed with the drawing. I made a rough freehand perspective sketch on the blackboard so the pupils would get a more vivid mental picture of the rack. The project selected was larger than the drawing paper, but after several preliminary measurements we decided it would fit very nicely drawn three-eighths the actual size.

We next measured from the top margin down on the left margin and found points thru which we later drew horizontal lines from margin to margin. (Lesson I). Some of those distances were given for the purpose of locating the drawing on the paper but when we came to distances on the drawing proper, I had the actual measurements reduced to a scale. I followed each explanation by drawing on the board. After working about thirty minutes the class finished part of the drawing giving the dimensions of one end.

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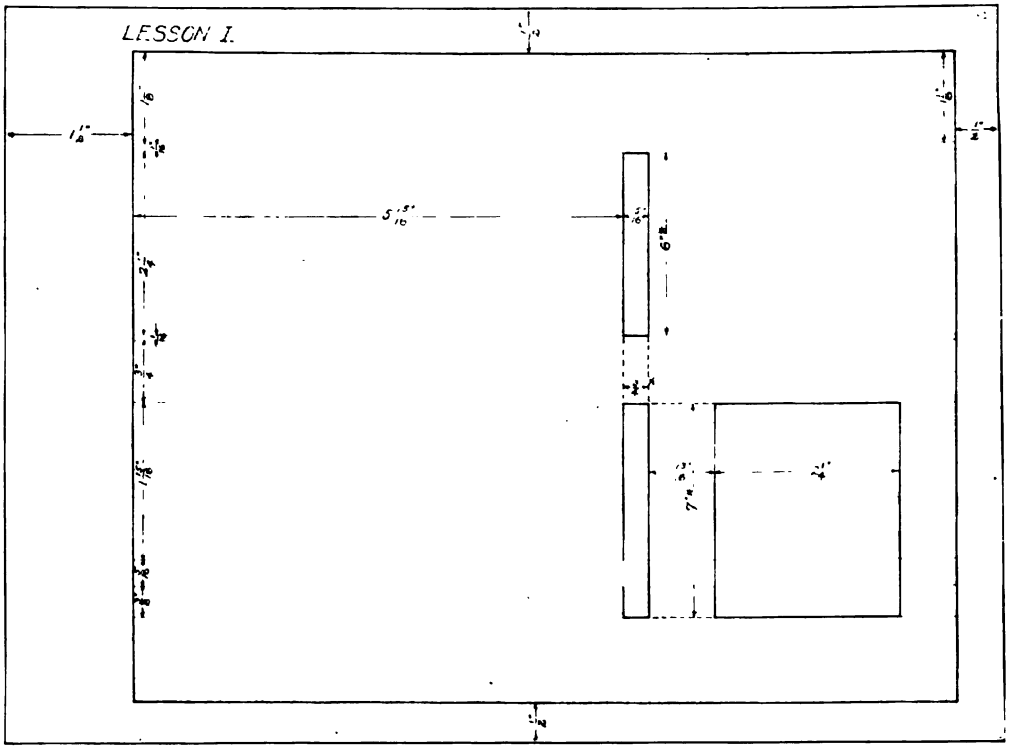

After drawing material was collected and textbooks (Griffith's "Essentials of Woodworking") passed, ten minutes was spent reviewing such topics as woodworking terms, face side, etc., in order to refresh all minds with the first principles of squaring up stock.

Rough stock, previously cut to be used for end pieces, was passed to each pupil. I questioned the class as to adjustments of the jack-plane; then I gave instructions to plane the face side of the board, and as soon as a boy thought he had it level, to come and have it tested and marked. He was then told to get the face edge square with the face side and have it marked. This was as far as most of the boys were able to get in the first lesson. The class was given five minutes to clean benches, collect stock and put the tools in order for the following class.

The second week the drawing was taken up where we left off at the end of the first lesson, and continued for thirty minutes, which completed the drawing proper. (Lesson II).

Review work in squaring up stock was continued in the textbook.

At the end of the second lesson in woodwork, about three-fourths of the boys had the first end piece ready to cut to length.

The third lesson completed the drawing, (Lesson III). More of the sixth-grade outline was reviewed, and the second end piece was about squared up in woodwork.

After all the boys had squared up the first end piece I called them around one bench and demonstrated how to saw and chisel out the notch at the bottom end. I likewise demonstrated how to cut the gains without splitting the edges, and how to make a good snug fit over the bottom piece.

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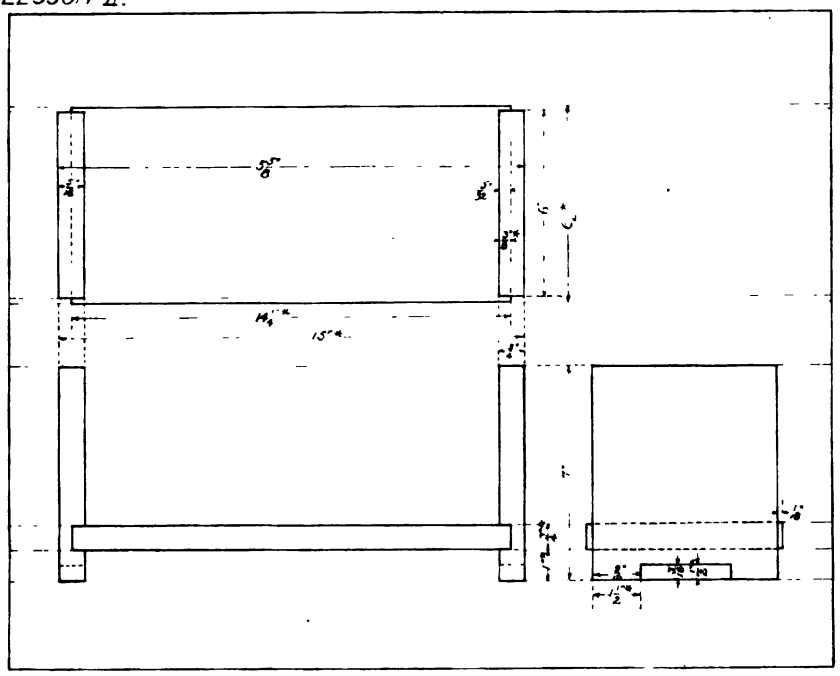
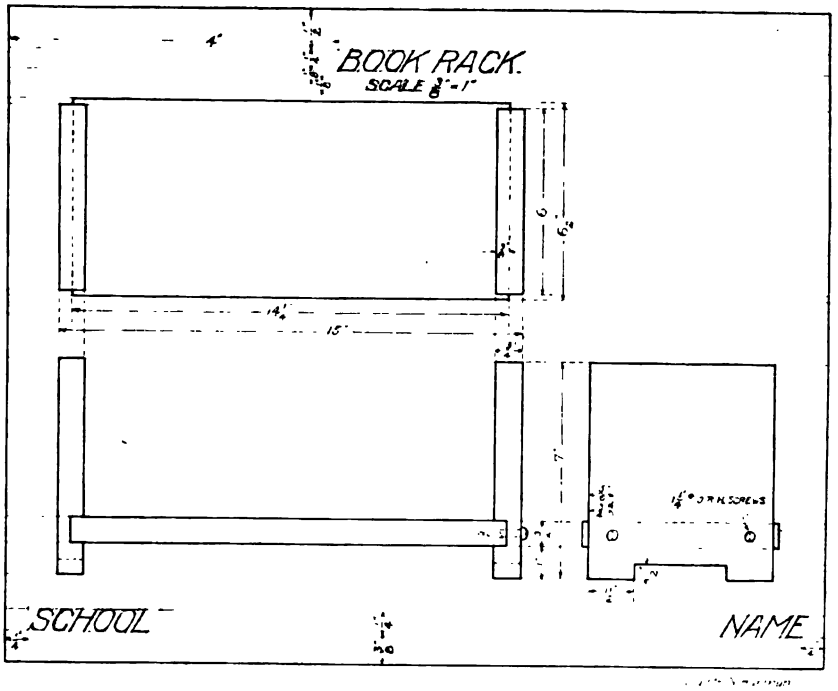
LESSON II.



LESSON III.



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I showed two methods of sawing gains, using the mitre box and by clamping a straight edge on the line and sawing against it with a back-saw. As a rule, in demonstrating I like to use a piece of work belonging to some boy who is behind in his work and somewhat discouraged as this will encourage him.

After the drawing was completed, the time previously given to drawing was used for woodwork until the project was finished; then a drawing of the next project was started.

When the time came for filling, staining and varnishing, I gave brief class demonstrations.

Most of the boys completed the book-rack in seven lessons.

NOTE: The dimensions marked with a star are the only dimensions put on the pupil's drawing.

The dark part of the drawing in lessons II and III, shows the part completed in previous lesson or lessons.

CLAUDE N. HARMAN,
Kansas City, Missouri.

THE boys in the seventh grade manual training classes of the Des Moines public schools are given woodwork one hour per week, and they follow a line of work that is laid out for them in our manual training course. This includes all woodwork and drawing for the entire year.

Our manual training shops in the different grade schools are all equipped and arranged as near alike as posssible, so when a boy is to be transferred from one school to another, he goes right on with his work under the same conditions and surroundings as in the shop he just left.

Each shop has twenty work-benches, and each bench is numbered and equipped with the following tools, which are also numbered to correspond with the bench to which they belong; smoothing plane, three chisels, 1"-½"-¼", marking gage, try-square, rule, screwdriver, back-saw, bench-hook, mallet, dust brush, and drawing kit, which includes drawing board, tee-square, and two triangles.

There is a certain place provided on each bench for keeping these tools in order. On the wall nearest the door is a hat-and-coat rack containing twenty hooks and twenty aprons. Each hook and apron are numbered to correspond with the numbers on the benches.

The rest of the shop equipment is as follows: general tool board, blackboard, stain bench, clamp rack, hardware and scrap case, and a cupboard in which is kept the boys' unfinished work. The lumber is stored in a rack out in the hall or in a vacant room next to the shop, and is brought into the shop and cut up on a pair of saw horses as it is needed.

When the class enters the shop on the first day, the boys are lined up in a single row, and assigned to their benches according to their height. The smallest boy gets bench No. 1, the next larger boy No. 2, and so on until the twenty benches are filled. Each boy is given to understand the bench he now has will be his to work on, and he must use that same bench thruout the year. He also uses the coat hook and apron on the coat rack that is numbered to correspond with his bench. Each boy is given an enrollment card, Fig. 1, to fill out with his name, address, telephone number, school, and a list of all the tools on the bench.

On the bottom of this card is printed a notice that all the tools are in good condition, in their proper place, and will be paid for, or replaced if lost, or broken, while being used by this boy.

The boy fills out this card, signs his name to the agreement on the bottom; then the cards are collected and filed away to be used by the teacher for making out the class enrollment, and as a reference.

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After the cards are signed and collected, the boys are started on a six weeks' drawing course, and no shop work is given during this time. These drawings are made from blocks cut into different shapes. A ought to learn how to sharpen his tools and I have found that the average seventh-grade boy, with a little practice, will do a fairly good job of it. This is a very important part of the shopwork, and some time ought

NAME_____ BENCH NO._____

SCHOOL_____ GRADE_____

CENTER_____ DATE_____

1—Back Saw	1—Eraser
1—Bench Hook	1—Gauge, Marking
1—Brush, Dust	1—Mallet
1—¼ inch chisel	1—Pencil
1—½ " "	1—Plane, Smoothing
1—1 " "	1—Rule 2 ft.
1—Compass	1—Screw Driver
1—Drawing Kit	1—Square, Try

I have carefully checked the tools listed above, all of which I have found to be in good condition. I hereby hold myself responsible for them and will report and replace any damage or loss caused by my neglect.

NAME_____

DES MOINES PUBLIC SCHOOLS
DES MOINES, IOWA
DEPARTMENT OF INDUSTRIAL EDUCATION

Pre-Vocational School Press, Des Moines

FIG. 1.—ENROLLMENT CARD

top, side, and end view of each block is drawn on the blackboard by the teacher, and the class draws from observation and dictation.

These drawing lessons have been a great benefit to the boys, as they have not only developed the art of thinking, accuracy and neatness, but they give the boys a chance to get acquainted with the rule and learn how to measure, which is one of the most important things about any kind of shopwork.

When the members of the class have finished the six drawing lessons, I give them a short talk on keeping the shop in order, the names of all the different tools and how to take care of them. Then I give them a thoro demonstration on sharpening the plane and chisels.

I have often noticed some teachers in the grades seem to think the boys should not be allowed to sharpen the tools. I believe when a boy reaches the seventh grade he to be given to it during the first few lessons in the shopwork. I believe, also, that the boys will get more out of the shopwork, if production is sacrificed a little, and more time spent teaching the boys about the tool-making industry, the different kinds of wood, how it grows, how it is cut down and made into lumber, and how to figure the amount of board feet, and the cost of each article he makes. Of course, this takes a great deal of time, but the teacher will soon find it is worth while, especially if he is teaching in a grade school where there is no correlation with the shopwork.

Our first seventh-grade exercise in wood is a blotter pad, Fig. 2. The class is given a demonstration on how to select the stock, to cut out the stock in the rough, to square it to a finished size, to lay out and cut to lines, and to assemble and finish the article.

These demonstrations are made as clear and brief as possible as to which tools to use

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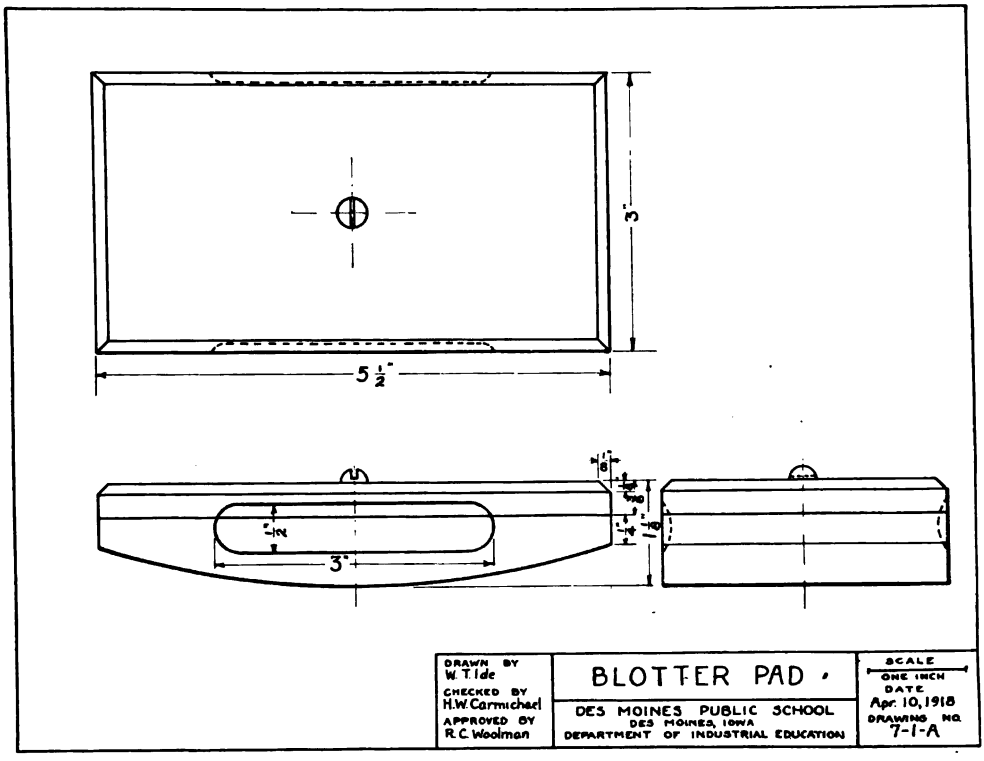

FIG. 2.

and the proper way to use them. It is a good thing at this time to tell the boys a few of the interesting things about the lumber they are using.

I try to make my demonstrations as brief as possible because boys of the seventh grade age soon become tired and lose interest if held at the demonstration bench too long. Two short demonstrations given at separate times are far better than one long one. The boys will also get a much clearer idea of what is to be done by having a short class discussion after the demonstration has been given.

I find the first few weeks of shopwork are the most important, and then is the time when sharpening tools, rough-cutting stock, squaring stock, cutting to lines, assembling and finishing, must be thoroly taught, because later, the faster and better boys will get so far ahead of the slower ones that class demonstrations are out of the question owing to the many different articles that are being constructed at the same time.

When the class period is ended, the boys write their names on their work and put it in the cupboard. All the tools are put in their proper places, benches are cleaned off, and the aprons hung on their own hooks.

While this is being done, two of the boys gather up the scrap lumber that can be used again and put it in the scrap case. The class is then dismissed from the shop in an orderly manner. This little program requires about three minutes, and not only saves the teacher a lot of extra work but leaves the shop all ready for the next class.

H. W. CARMICHAEL,
Prevocational School,
Des Moines, Ia.

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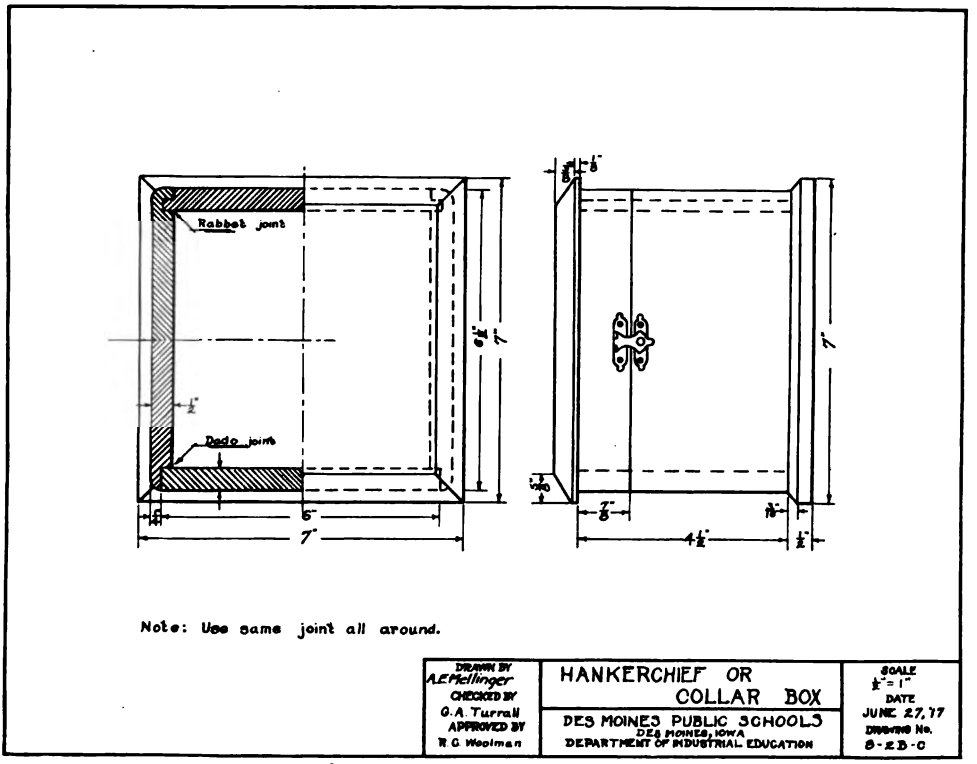

THE course in elementary wood working and mechanical drawing as given in the Des Moines schools aims to give the students three main opportunities.

1. Acquisition of skill in the handling of woodworking tools.

2. Practice in designing simple projects in wood.

3. Insight into the methods and problems in the shop.

Manual training is taught from fifth grade to eighth grade inclusive. The fifth, sixth and seventh-grade boys have one hour each week. The eighth-grade boys have three hours once each week. In general, the technical processes involved increase in difficulty thru the grades.

Many boys who have completed the fifth, sixth and seventh years of work in the shop, altho enthusiastic in working out the problems from year to year, do not obtain equally satisfactory results. Hence, the first class period in the eighth grade requires tact and patience on the part of the instructor. To simplify matters the first day, I have had the boys, upon entering the shop, form a line in order of height, the tallest first and the shortest at the end of the line. Then I gave each boy an assignment card, and proceeded to direct the tallest boy to bench number one, the others following in order of rank in line.

Now, because the boys are not of equal motor ability, and one problem is to find out their respective abilities, I gave them a choice of three projects; collar box, glove box or handkerchief box, because the tool process of construction involved is practically the same and I can better direct the work, simplifying when necessary to meet their varying degrees of ability.

At the close of the school year, in June,

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the tools were covered with petroleum. I now ask "B" class boys to clean tools, while the "A" class boys were "socialized" thru cutting out stock from a "cutting bill" placed where it can be easily read, ¼" being allowed in width and 1" in length. In one hour we had all the tools cleaned, stock cut out and ready to commence work. Each boy made out his assignment card, checked his tools and noted their condition on this card. After a brief explanation of the tools and their particular functions, I gave a practical demonstration of planing a true surface; squaring an edge and gaging to width; laying out one side and one end, explaining the extreme care to be taken in marking on lines correctly and cutting to them. After making one joint, gluing and nailing same, showing the reason for placing of nails, care to be taken in avoiding line where lid is cut off, I demonstrated the use of the handscrew, thereby showing how it could be used to make a perfect fit. My directions from now on were individual and at the end of the three hour period, I found many of the boys with a greater part of the stock squared up. If during this time, an exuberance of spirit manifested itself in whispering or pushing, I remembered this was the first day of shopwork and checked the disorder firmly but kindly, never forgetting that twenty minds were trying to figure out the personality of the teacher, even as he was trying to figure out the personality of twenty different boys.

CHARLES G. TURRALL,
Greenwood School,
Des Moines, Ia.

CHECKER-BOARD TABLES AND THE BOYS WHO MADE THEM AT WELLSVILLE, N. Y., UNDER THE DIRECTION OF WM. J. BURBRIDGE.

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EDITORIAL REVIEW OF THE MONTH

EVERY School program in the United States should provide at once for the acquisition by every pupil of some kind of ocular and manual skill. There is no such general provision or expectation now, but the lesson which the war so plainly teaches must not be lost on any of the authorities that control or influence the programs of elementary and secondary schools. The demands of the Navy and Army illustrate this need, but the demands of the industries of the country are not less urgent. It is not to be expected or desired that all pupils should acquire the same sort of skill. On the contrary, variety among the pupils is highly desirable, but it is indispensable that every pupil should acquire some skill. Every girl should learn to sew and to cook, and every boy should learn, when he is strong enough, to use the tools of a carpenter, a mason, and a plumber. Every child, whether girl or boy, should learn mechanical drawing and the elements of freehand drawing. Instruction in these subjects should begin in the elementary school and be carried through the secondary school.—Charles W. Eliot, President Emeritus of Harvard University. From an address at Reed College, June 1, 1918.

DURING the coming year it is going to be the special aim of this MAGAZINE to keep before the manual arts teachers of the nation the big events that are taking place so far as they pertain to the manual arts and vocational training, to record the best thoughts of men who are leaders in this field, and to extend a helping hand to the man who comes to the classroom for the first time as teacher, or to anyone who feels the need of practical assistance. In order to be more affective in rendering this service, we have secured the cooperation of four men prominent in their respective sections of the country who will report current events for the Field Notes department, and contribute to other departments of the magazine as opportunity presents itself.

George M. Morris, assistant director of manual arts in the public schools of Boston, will represent the New England section. Mr. Morris was educated in the Boston elementary schools and the Mechanic Arts High School. He taught manual training in the normal school at Fredericton, N. B., the Coffin School, Nantucket, Mass., the Technical High School, Syracuse, N. Y., and the Dorchester High School, Boston. Meanwhile he studied at the University of New Brunswick, Bradley Polytechnic Institute, Cornell University and Wentworth Institute. About a year ago he was selected by Supervisor John C. Brodhead as his assistant. Mr. Morris is vice-president of the Boston Manual Training Club.

William H. Dooley will represent the section centering in New York City. Mr. Dooley is at present in charge of the continuation school for the civilian employees of the New York Navy Yard, and lecturer on principles and methods of vocational sci-

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ence and mathematics at the City College of New York. He is the author of the following well-known textbooks:—"Vocational Mathematics for Boys," "Vocational Mathematics for Girls," "Textiles," "Boot and Shoe Manufacture," "The Education

WILLIAM H. DOOLEY

of the Ne'er Do Well," "Vocational Science" and "Principles and Methods of Vocational Education," (in press).

J. L. Pemberton will represent the section centering in St. Paul and Minneapolis. Mr. Pemberton is a graduate of Hamline University, and is a practical painter and wood-finisher, having had five years' experience. He is also accredited as a carpenter and builder. He is now instructor in mechanical drawing and descriptive geometry at the Central High School, Minneapolis. For three years he was teacher of high school science and then for three years he taught both science and manual training; the last seven years he has devoted exclusively to manual arts work. Mr. Pemberton has spent several summers in study at Stout Institute.

Edward G. Anderson will represent the far northwest. Mr. Anderson is a former student of Chicago Art Institute, and a graduate of Bradley Polytechnic Institute. While taking his course in these institutions, he acquired experience in newspaper work. During the past three years he has been a teacher in one of the industrial centers in Seattle. Last winter he was elected president of the manual arts section of the Washington State Teachers Association.

GEORGE M. MORRIS

PART-TIME COOPERATIVE PLAN APPLIED TO RETAIL BUSINESS IN PITTSBURGH

AN organization known as the "Research Bureau for Specialized Training in the Retail Business" has been formed in Pittsburgh. Its purpose is to bring about and maintain cooperation between the public schools, the Carnegie Institute of Technology and the department stores of the city in the training of employes in these stores. The purpose also covers the offering of fellowships to college graduates who wish to investigate certain phases of business education.

Statistics show that 1697 boys and girls have left the upper grammar and high school grades of the public and parochial schools of Pittsburgh to go to work during the period from September, 1917, to April, 1918, inclusive. It is expected that an equal or greater number will drop out of school during the coming year, owing to

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the present demand for labor. The department stores cooperating in the new Bureau estimate that they, alone, can provide positions for 1700 young people on a part-time basis. This condition offers an exceptional opportunity on a large scale, and the recent action of the Board of Education and

J. L. PEMBERTON

of the Research Bureau assures that something will be done. The cooperating retail merchants of the city have guaranteed a generous subsidy for the support of the project, covering a period of five years. The proposed annual budget is $32;000.

The Executive Board of the Bureau will consist of one representative from each of the department stores contributing a specified amount, three representatives from the public schools, one from the faculty of the Margaret Morrison Carnegie School, one from the faculty of vocational education, and one from the faculty of psychology of Carnegie Institute of Technology and one from the Bureau of Salesmanship Research.

PROPOSE A FIVE YEAR HIGH SCHOOL TRADE APPRENTICESHIP

ANOTHER progressive movement in Pittsburgh which is under consideration is a proposition to establish continuation classes and a five-year apprenticeship course at the Latimer Junior High School in cooperation with the American Locomotive Company and other manufacturing plants near the school. It is proposed to give continuation school instruction four hours one day a week from 8 to 12 or from 1 to 5. The men would come from the following trades: machinist, boil-

EDWARD G. ANDERSON

ermaking, pipe fitting, pattern making, and carpentry. The trade apprenticeship courses will be somewhat like those in Boston. The entire time of the first year would be spent in the high school. During the second, third and fourth years the students would alternate by weeks between school and factory. The fifth year and the vacations would be spent in the factory. A high school diploma would be given at the end of the fifth year.

THE FISHER EDUCATION BILL IN ENGLAND

FOR many months American educators have been interested in the progress of the education bill presented in the English Parliament by Lord Fisher. They have been especially interested in its provision for part-time education for industrial workers. One of the latest statements received indicated that owing to "formidable opposition" to this part of the bill by the Lancashire textile manufacturers, Lord Fisher had proposed a compromise, accept-

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able to the Lancashire group, which reduced the number of hours of instruction annually from 320 to 280 and postponed for seven years the enforcement of this part of the law. The reason for this action is made clearer by the following quotation from a letter by F. H. Knowles, editor of *Manual Training* written at Maidstone, Kent, on June 24th.

Teaching is trying work these days; in fact it has mainly resolved into keeping the organization of the schools going. Over 50 per cent of the male teachers are either engaged in fighting our common enemy or making munitions of war. Consequently manual training has had to be taken out of the time-table in many schools. The Education Bill which was to make part-time education compulsory up to the age of 18, and from which we hoped so much, has had to be altered so that it does not come into operation until seven years after the war, the sole reason being that there are not enough teachers to work the new schools. And yet, withall, there is much to cheer one in connection with matters educational. This old country has at last awakened to the value of education, and although we are a conservative and slow-moving people, you may depend upon it, having once set our hands to this work, we shall see it through.

This war has created a demand for more educational facilities and the demand is coming from those, who hitherto, have been indifferent —the working classes. It is generally expected that the Labor Party will be in a majority at the next election, and as they are the only political party who are pledged to a definite plan for reforming education, we, who are interested in it—education—look to the future with the utmost confidence.

BROTHERS ALL

THIS same letter from Mr. Knowles contains another passage which is so fine in spirit and so characteristic of English manual training teachers as I have known them that I want to pass it on to our readers. I believe Mr. Knowles will forgive me for taking such a liberty with his letter. At the present moment when our boys are fighting in Flanders side by side with the boys from Great Britain, such a letter warms the heart and makes us conscious that some of the finer things in human fellowship are coming out of this terrible war. Here is what Mr. Knowles says:—

As I write, the deep thud of the guns in Flanders sounds incessantly. A week ago I saw thousands of the dear fellows you have sent over to help with this mighty job. We stopped our work in school to cheer them on their way. And as I watched, and admired,—for they were splendid types of manhood—I wondered how many of them were teachers, and how many were teachers of manual training. Of course it was idle musing so, but you know it would be helpful to us—and maybe to them—if we could but have exchanged a word or two of greeting. Is it possible to bring our teachers and yours together when your men are in England? If you know of any and they are in the neighborhood of London, I should consider it no small favor to arrange for them to see something of the work done over here. It would be possible, I feel sure, to welcome them to our homes during any leave they may get when over here. War is a horrible thing but there is no need to let it blunt our finer instincts. So let your folk and mine meet together and talk of education, and books, and pictures and of the hundred and one other things that go to make better this probation we call life.

FRANK H. BALL DIES AT LOS ANGELES

ANNOUNCEMENT of the death of Frank H. Ball, formerly president of the Santa Barbara State Normal School of Manual Arts and Home Economics comes as a shock to his many friends thruout the country. Few men in the manual arts field are so widely known, and perhaps no one else has been so cordially liked by so many people in so many places as he. This was because Mr. Ball always extended a friendly hand and had a hearty greeting for everyone with whom he came in contact. In a very unusual degree he was able to meet on the common ground of friendly interest all sorts of people. This ability, with a never-failing sense of humor and a phenomenal capacity to see the bright side of things as they came along in life, were

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the secrets of his unusual personal power. Mr. Ball will be mourned by teachers with whom he has been associated, but far more, we believe, when they learn of his death, will he be mourned by the scores of boys, many of them now men, whom he has lifted and cheered when they were in need of a friend and a brother. Many have been the youngsters in the darker corners of New York, Cincinnati and other cities, who have almost worshipped him as the champion of the "square deal." There was nothing they would not do for him. If the experiences of his earlier years, and some of his later years, of contact with boys could be written, they would compete with the most absorbing stories of boy life. This is a side of his unique career not generally known to the men whom he has met during the past few years. To those who have known Mr. Ball for twenty-five years or more, and have had an opportunity to follow his progress in teaching, in study and in social service—who have known his high motives, his early educational handicap, his struggles and his crushing disappointments, as well as his successes, he stands out as a remarkable embodiment of the spirit of courage and good cheer.

Mr. Ball was born in Worcester, Mass., fifty-six years ago: he died at the California Hospital in Los Angeles, Calif., on July 16th, when he failed to recover from a surgical operation which became necessary on account of an injury to his back caused by a fall about a year ago at the State Normal School in Santa Barbara. He leaves a daughter, Katherine, who has been living with him in Los Angeles, his wife having died three years ago.

After an elementary schooling, Mr. Ball entered the Crampton Loom Works, Worcester, Mass., to learn the moulder's trade. Before completing his apprenticeship, however, and because of peculiar circumstances in the shop and of his personality and general qualifications, he was placed in charge of the foundry where he was an apprentice. Soon after this he was teaching foundry work at the Worcester Polytechnic Institute. Then he was at the Rindge Manual Training School in Cambridge, Mass., and later at the New York College for the Training of Teachers (now Teachers College). While here he taught the street boys in several centers of philanthropic work in New York City. A little later, Mr. Ball was doing similar work at Hull House, Chicago, and teaching in Professor John Dewey's famous experimental school. In 1900 he was an instructor in Throop Polytechnic Institute, Pasadena. Later he was for three years in charge of industrial education in the island of Porto Rico, where he did organization work in a new field. On returning to the States, he became supervisor of industrial education in Cincinnati, where he remained for seven years. The next four years he held a similar position in Pittsburgh, Pa. Then came the opportunity to return to California, to become president of the State Normal School at Santa Barbara. He entered upon this new work with his usual enthusiasm. But California had other work for which he was peculiarly fitted, and a few months ago he was induced to go to Los Angeles to take charge of the training of industrial teachers under the Smith-Hughes law. This new work, which promised so much under his direction, had hardly more than begun at the time of his death.

In the midst of all this activity, Mr. Ball had found time to travel in Europe and to complete a college education, graduating with his daughter at the University of Pittsburgh about two years ago. About that time, in speaking, with pride, of the marked success of his daughter in her college life, he revealed the fact that he, too, was a candidate for graduation, and said, "I couldn't have the little girl get ahead of her dad that way."

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WASHINGTON CORRESPONDENCE

EDUCATION HELPING TO WIN THE WAR

THERE probably never was a time when education was as much thought about and discussed in Washington, especially in official circles, as at present. Notwithstanding the feverish excitement of new and unheard-of undertakings, and intense preoccupation with matters relating to the war, education is a very live topic in Washington, the "Capital of the World."

During the period of agitation immediately preceding the passage of the Smith-Hughes Act, I recall the feeling that was expressed that it would be impossible for education to take a more prominent place in government councils. I believe, however, that the present surpasses even that remarkable period in this respect.

MANY GOVERNMENT AGENCIES INVOLVED

CONSIDER the activities of the Bureau of Education, The Federal Board for Vocational Education, the Committee on Education and Special Training of the War Department, and the Sub-Division on Education of the Surgeon-General's Office, referred to elsewhere in this number. I could easily use all of the space allotted to me in further report on the work of any one of these. The same is true of the N.E.A. Commission on the National Emergency in Education, or the American Council of Education of colleges and universities, or the U. S. School Garden Army, or the campaign for Americanization, or the Junior Red Cross drive.

The War Department is putting into operation this fall a gigantic plan to mobilize and develop the brain power of the young men of the country for those types of service which demand special training. By means of the Students' Army Training Corps, to be organized in educational institutions, certain changes and adjustments will be brought about which will profoundly influence our system of secondary and higher education for decades to come.

The U. S. Shipping Board, thru the Emergency Fleet Corporation, maintains an elaborate and effective scheme of industrial education for certain classes of its employes, as well as an organization for the training of its own teachers and directors. The Ordnance Department has established a special division to deal with the problem of providing educational facilities for the children in the families of employes in the immense powder plants and other works which are springing up like mushrooms over night. The Food Administration is carrying on several campaigns directly affecting the schools. I understand also that the Commission on Industrial Housing has considered the question of providing educational facilities in connection with the dormitories which it is proposed to erect in various places for the temporary accommodation of Government employes.

These are but the most prominent of the current activities of Government agencies having to do directly with education in some form. If I could adequately picture the situation I am sure it would be possible to show that never before in the history of this country have so many prominent and influential people believed that "education is not only good, but good for something."

EDUCATION AND UNIVERSAL MILITARY TRAINING

ONE very important turn which this interest in education may take is suggested by the following comment of the Washington correspondent of the New York *Evening Post,* on August 1st:

> For many weeks there have been whisperings to the effect that President Wilson has changed his mind about universal military training as a permanent institution in American life. Nothing definite has issued from the White House or anywhere else about it, but, just the same, something has happened. *****

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Mr. Wilson has always felt that some system of universal military training is desirable, but he scented dangers in its application. Now he has made it clear to those who have broached the question with him that if a plan can be formulated which will make it possible to introduce vocational and industrial education on a large scale in this country it would unquestionably be worth while doing. No one has drafted a complete or adequate plan as yet, but different groups of those interested are hard at work on it, knowing that the President will give serious consideration to the various proposals submitted.

Precisely what is involved in this more or less cryptic correspondence, I have not been able to learn. Nevertheless, the fact that it was given a full column on the front page of the Washington *Evening Star,* with prominent headlines, is itself significant. The growing emphasis on the need for vocational education is of special interest to readers of this MAGAZINE.

THE BUREAU OF EDUCATION

IN SPITE of serious limitations in personnel and financial resources, the Bureau of Education is making a substantial contribution in this war emergency. In addition to its own special activities, its knowledge of the schools and its machinery for communicating with them have proved indispensable to numerous government agencies.

As a further evidence of the extent of activity in educational matters, the Bureau has found it necessary to begin the publication of an official bulletin, which attempts to bring together, coordinate, and interpret the important news. *School Life,* Vol. I, No. 1, 16 pp., appeared on August 1, 1918.

GOVERNMENT POLICIES INVOLVING THE SCHOOLS IN WAR TIME. II.

UNDER this title the Bureau issued on June 24th the tentative draft of a program for science and industrial arts instruction in secondary schools, as part of a campaign for offering specific help in adjusting school courses to the war needs of the Government. The recommendations in this report are the result of a series of conferences held during the week of May 20, by a group of twenty specialists in these two fields, summoned to Washington by the Commissioner of Education, to assist in formulating a statement of what the schools can do.

Taken in conjunction with an earlier pamphlet of the same title, published last April, the new report "supplements in a concrete way the judgment of the administration by giving in terms of the teachers and superintendents themselves just what the school war program should be in these two important fields."

When issued in its final form the report will contain definite recommendations as to methods of organizing the schools in order to obtain the results sought without sacrificing the values of general education, and outlines of selected courses of study. The course of study material is prepared in such form as to be adapted readily to varying conditions.

THE U. S. SCHOOL GARDEN ARMY

PRESIDENT Wilson has allotted the sum of $200,000 from his special national defense fund for the maintenance of the work of the United States School Garden Army, of the Bureau of Education. This amount is for ten months, beginning September 1, 1918.

With an initial appropriation of $50,000 from the same source, available last March, a most creditable showing was made. More than a million and a half boys and girls are enrolled, under 50,000 teacher-supervisors. Approximately 100,000 acres of ground have been placed under cultivation.

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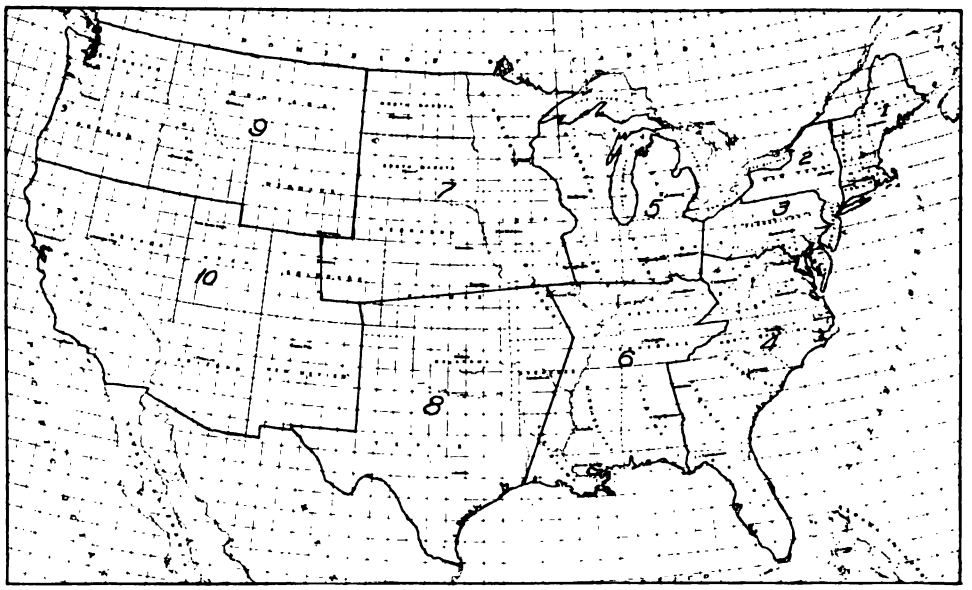
DIVISION OF RECONSTRUCTION, SURGEON-GENERAL'S OFFICE

THE Sub-Division of Education in the Division of Physical Reconstruction under the Surgeon-General, U. S. Army, was begun in October, 1917, by the appointment of Wilson H. Henderson, director of the Milwaukee Extension Center of the University of Wisconsin. On November 3d, M. W. Murray, director of vocational education, Newton, Mass., was appointed, and on January 3d, 1918, A. C. Monahan, specialist in school administration, U. S. Bureau of Education. These three men were commissioned Majors of the Sanitary Corps, National Army. In February, 1918, Major Henderson was transferred to Fort McHenry, as chief of the educational service in Army General Hospital No. 2, and Major Murray was assigned on part time to Walter Reed Hospital. On May 20, 1918, Dr. James E. Russell, dean of Teachers College, Columbia University, New York, was appointed chief of the Sub-Division.

The first educational work with patients was begun at Walter Reed Hospital on February 20, at Fort McHenry early in March, and at Fort McPherson, Ga., on April 15th. Other units have been organized as rapidly as circumstances required. The list of hospitals in which educational departments have been organized, up to August 1st, together with the names of educational directors and assistants, includes the following:



MAP SHOWING THE TEN ADMINISTRATIVE DISTRICTS OF THE COMMITTEE ON EDUCATION AND SPECIAL TRAINING OF THE WAR DEPARTMENT. SEE JUNE NUMBER, PAGE 370.

Letterman General Hospital, Presidio, Calif., Maj. A. R. Cullimore, dean of the State College of Engineering, Newark, Del.; *General Hospital No. 2,* Fort McHenry, Baltimore, Md., Maj. W. H. Henderson; Lt. S. J. Vaughn, director of manual training, State Normal School, DeKalb, Ill.; *General Hospital No. 6,* Fort McPherson, Ga., Maj. John L. Riley, superintendent of public schools, Holyoke, Mass.; Capt. Fred Smith, director vocational education, Passaic, N. J.; *Walter Reed General Hospital,* Takoma Park, Washington, D. C., Maj. Bird T. Baldwin, professor of education and head of department of psychology, University of Iowa; Adolph Shane, dean of the engineering school, Highland Park College, Des Moines, Ia.; *General Hospi-*

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tal, Fort Des Moines, Ia., Lt. W. B. Mooney, director Extension Department State Teachers College, Greeley, Colo.; Lt. Fred Siegel, instructor shopwork, Stuyvesant High School, New York City; J. A. Sexson, superintendent public schools, Sterling, Colo.; *Hospital No. 7,* for the blind, Roland Park, Baltimore, Md., O. H. Burritt, superintendent asylum for the blind, Overbrook, Pa.; *General Hospital No. 9,* Lakewood, N. J., Maj. Fred P. Reagle, director vocational education, Montclair, N. J.; *General Hospital No. 16,* New Haven, Conn., Capt. Frank A. Waugh, dean of the Horticultural Dept., State Agricultural College, Amherst, Mass.; *General Hospital No. 17,* Markleton, Pa., Lt. John A. Manahan, professor of education, University of Virginia; *General Hospital No. 18,* Waynesville, N. C., Lt. L. E. Williams, instructor, Newton Vocational School, Mass., and superintendent of the Lenox Motor Car Co.; *General Hospital No. 8,* Otisville, N. Y., Lt. E. L. Clark; *General Hospital,* Carlisle, Pa., which is to occupy the quarters, after alterations, of the Carlisle Indian School, disbanded August 1st, Prof. Frank Sanborn, director, department of industrial arts, college of engineering, Ohio State University.

TYPES OF WORK

THE work undertaken has been practical, so far as possible, and has included work needed for the hospitals. Basketry, typewriting, telegraphy, and academic work were the first subjects of instruction. Arithmetic, agriculture and gardening, bookkeeping, freehand drawing, mechanical drawing, penmanship, auto repair, carpentry, shoe repairing, and other handicrafts have been introduced. In all, I am told, nearly one hundred different activities are now being carried on in the educational departments of the hospitals. At Walter Reed Hospital, which I visited twice in July, the number is nearly thirty.

At Fort McHenry the work accomplished in the first four months included the following items:

In the printing shop, nine issues of the "Trouble Buster," the hospital weekly newspaper, have been printed, also the hospital Official Bulletin, and 75 job orders from officers of the post; in the shoe shop nearly 200 pairs of shoes were repaired; in the carpenter shop 30 hospital tables were made, 2 desks, 1 operating table, 6 drafting tables, 14 waste paper baskets, and a number of bulletin boards and drafting boards; the furniture repair shop restored to usefulness a quantity of hospital furniture; and in the auto repair shop four worn-out cars donated to the hospital were repaired and put in running order, and are now used for instructional work.

SIXTEEN HOSPITALS AUTHORIZED

ON AUGUST 1st it was announced that the General Staff had approved plans of the Surgeon-General establishing sixteen general convalescent and reconstruction hospitals, including those named above, or one in each of the sixteen military districts of the country. It will thus be possible to bring home influences to bear on the wounded men, in a measure at least. Decentralization will at least make it much easier for a man's family and friends to come to visit him.

Each hospital is to be fully equipped for the treatment of every case of disability caused by wounds, gas, liquid fire, and disease. As soon as the circumstances of each case permit, the disabled soldier begins some line of manual activity at the bedside or in the ward, and later goes to the "curative workshop," where he will be given instruction preparatory to the occupation of his own selection for which he seems best fitted.

RESULTS ALREADY ACHIEVED

IN THE Surgeon-General's office Major Murray and Major Monahan showed me a file of the weekly reports from the hospital educational directors, and it is an extremely interesting story that they tell.

The records of 516 cases which have been treated in four hospitals show 134 men able to return to full military duty; 210 fit for return to limited service; and 172 who are eligible for discharge.

In the last group, 12 are classed as helpless or institutional cases; 121 are able to return to their former occupations; and 39 will need further training to fit them for earning a livelihood.

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These figures show the division of responsibility in the work of reconstruction. The task of fitting men for further military service is at present the most pressing need, because, wherever an able-bodied man behind the lines can be replaced by one less fit physically, but vocationally capable, a soldier is gained for active duty.

THE TEACHER PROBLEM

AS INDICATED in the list given above, the schools of the country have been called upon to contribute a number of educators having special qualifications for this important work. It is probable that the chief educational officers in the hospitals, and a certain proportion of the assistants and instructors, will be secured from this source. For the most part, however, the instructors have been and will be secured from among the convalescent soldiers themselves who are already skilled in their vocations, and from the enlisted personnel of the army. These latter will be secured by transfer or by induction of registrants disqualified for general military duty, but qualified for special limited service.

On July 30th the General Staff authorized commissions for 118 additional educational officers for this work.

FEDERAL BOARD FOR VOCATIONAL EDUCATION

IN JUNE, 1918, Congress passed the Smith-Sears Act, providing for the vocational rehabilitation and return to civil life of disabled persons discharged from the military or naval forces of the United States. The Act delegates to the Federal Board for Vocational Education the responsibility for reeducating the disabled men in some useful employment, after their discharge from the army or navy, and provides for a plan of cooperation between the Board and the Surgeon-General's Office covering the work done in the hospitals, in order that the men may have the advantages of a continuous and coordinated plan.

REORGANIZATION

THE assumption of the new responsibilities made necessary some reorganization of the Federal Board. Under the new plan there are four Divisions: (1) Vocational Education, L. S. Hawkins, chief; (2) Vocational Rehabilitation, T. B. Kidner, of the Canadian Hospitals Commission, acting chief; (3) Research, Charles H. Winslow, chief; (4) Office and Administration, including C. E. Alden, chief clerk; H. F. Dolan, disbursing officer; and D. J. Richardson, legal adviser. The position of assistant director for agricultural education, made vacant by the transfer of Mr. Hawkins, has not yet been filled.

The organization of the staff for vocational rehabilitation provides for six superintendents, and for a number not yet determined of district vocational offices. The six superintendents, all of whom have not yet been appointed, will have charge, respectively, of the following lines of work: (1) Cooperation; (2) Case Work; (3) Medical Corps; (4) Records and Returns; (5) Advisement and Training, Walter I. Hamilton, agent, State Board of Education, Boston, Mass., until recently in charge of the War Training activities of the Federal Board; (6) Employment.

Dr. J. C. Miller, chief inspector of schools, Alberta, Canada, has been appointed supervisor of the establishment and operation of the district vocational offices.

APPOINTMENTS

ON JULY 11th, Prof. Kenneth G. Smith, State College of Agriculture, Ames, Iowa, until recently engaged in the Research Department of the Federal Board, was appointed special agent for industrial education, with headquarters at Indianapolis, to succeed R. J. Leonard, who resigned to accept a position at the University of California. J. C. Wright, agent for industrial education, with headquarters at

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Kansas City, has been transferred to the Washington office in charge of Special War Training. His successor has not yet been appointed. The vacancy in the Kansas City office in agricultural education has been filled by the appointment of C. V. Williams, principal of the State School of Agriculture, Curtis, Nebr.

At the expiration of their leaves of absence on September 1st, the two field agents in home economics return to their former positions, Miss Alice M. Loomis to the University of Nebraska, and Miss Anna E. Richardson to the University of Texas. Their successors are Miss Louise Stanley, department of home economics, University of Missouri, and Miss Adelaide S. Baylor, state supervisor of household arts, Indianapolis, Ind.

CONFERENCES

DURING the summer officers of the Federal Board conducted an important series of regional conferences, for the purpose of discussing the special problems and needs of the several states. These conferences were held as follows: Indianapolis, June 24-26; San Francisco, June 25-26; Garden City, N. Y., June 28-29; Manitou, Colo., July 2-3; Tuscaloosa, Ala., August 8-9.

On July 11-13 the Federal Board conducted a series of conferences in Washington, with representatives of the states. The topics discussed included the administration of the Smith-Sears Act providing for the vocational rehabilitation of disabled soldiers and sailors, and problems of state supervision, teacher training, and legislation.

NEW POLICY ANNOUNCED

THE problem of adequate supervision of the work of training vocational teachers has proved to be a serious one in a number of states. Relief has come thru a new policy adopted by the Federal Board on July 11th, in accordance with which a certain part of the Federal fund may be used for the expenses of maintaining such supervision.

When the state plan has been approved by the Federal Board, the state may use not to exceed 25 per cent of the maximum amount which may be used for teacher-training in any one of the three lines (agriculture, trades and industries, home economics) for the maintenance of supervision in that line. The maximum amount of the teacher-training fund which may be used in any fiscal year in any one of the three lines is 60 per cent of the total amount allotted to the state for that year for teacher-training. Thus, 25 per cent of this maximum in any one line is 15 per cent of the total available teacher-training fund.

PUBLICATIONS

THE activities of the Federal Board are set forth in considerable detail in the official journal, "Vocational Summary." This journal is published monthly, and four numbers have appeared.

Since the last report the following bulletins have been issued:

Bulletin No. 13. (Agricultural Series No. 1) Agricultural Education: Organization and Administration.

Bulletin No. 14. (Agricultural Series No. 2) Reference Material for Vocational Agricultural Instruction.

Bulletin No. 15. (Reeducation Series No. 3) The Evolution of National Systems of Vocational Reeducation for Disabled Soldiers and Sailors.

In conclusion, I may add that Mr. Hawkins has called my attention to the fact that, with the single exception of the fund for agricultural education in Rhode Island, all of the 48 states have now accepted the provisions of all three funds under the Smith-Hughes Act.

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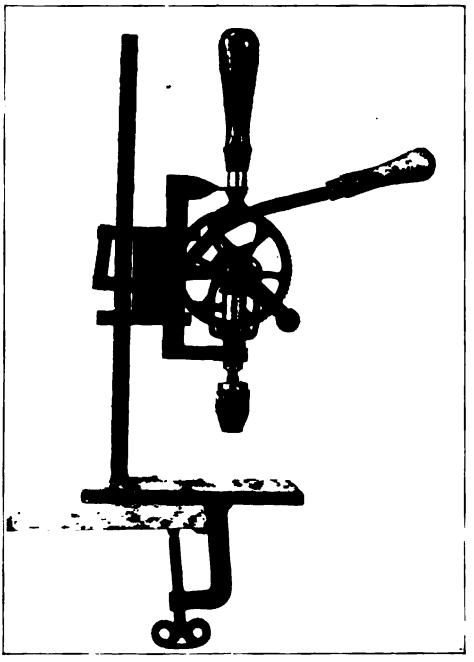
SHOP NOTES AND PROBLEMS

ALBERT F. SIEPERT, Editor

HAND DRILL SUPPORT

THE drill support in the illustration is one of a number which were designed and constructed in the metalworking class last year at Miami University. In each case the design was varied to suit the various sizes and makes of drills used.



No machine tools, other than a good blacksmith's drill, were used. The clamp was taken from a discarded washing machine wringer, the bed was a scrap of wagon tire stock, and the post a piece from an old quick-acting vise; but any piece of 5/8"x5/8" stock could be used for the latter. All the thin pieces were cut from 1/8" stock.

The carriage is clamped to the post, and the upper support to the sliding bar by means of 1/4" round head stove bolts. The stay bar, which prevents the drill from turning, and the handle are also held in place by a bolt. A lock-nut screwed on the handle-screw under the handle makes the drill firm. No details were given for the clamp or handle. The handle can be fitted after the various other parts have been made and assembled.

The post was brazed to the table after riveting to make it strong and solid. In drilling the holes for the rivets a method similar to superposition was used. The holes were drilled in one piece, and the other member placed in position for marking. Sometimes only one hole was drilled in the second piece, and then the two pieces firmly riveted in position. The second hole was then drilled, using the hole in the first piece as a jig.

In riveting, the holes were countersunk by using a drill 1/8" larger than the one used for drilling the hole. A piece cut from a bar some 3/16" longer than the total thickness of the pieces was driven in the hole and riveted down. The surplus stock was filed off, and the surface draw-filed to secure a smooth finish. Emery cloth was used on irregular or curved pieces.

The holder was finished by bluing and rubbing with oily waste over a smoky fire.

FOREST T. SELBY,
Miami University,
Oxford, Ohio.

ALL-METAL-HOLLOW-HANDLE SCREWDRIVER

A very useful adjunct to a mechanic's tool kit is an all-metal-hollow-handle screwdriver. Tho I have used one for many years it is only during the past two years that I have had my junior pupils in machine shop practice make them.

Every student some time during the first semester makes two such screwdrivers. These are made in various sizes, and are for use in the Manual Training and Vocational Departments of our schools. The handle is made of cold steel and the shank is made of low carbon tool steel. Following is a list of operations in their proper sequence:—

1. Cutting material to proper length in power hack-saw.

2. Centering ends. If stock is over size in diameter this might be done by the use of hermaphrodite calipers and a center-punch; then, of course, drilled and countersunk. If material is not to be reduced in diameter one of the more accurate methods of centering should be resorted to. I do not advocate the use of the combina-

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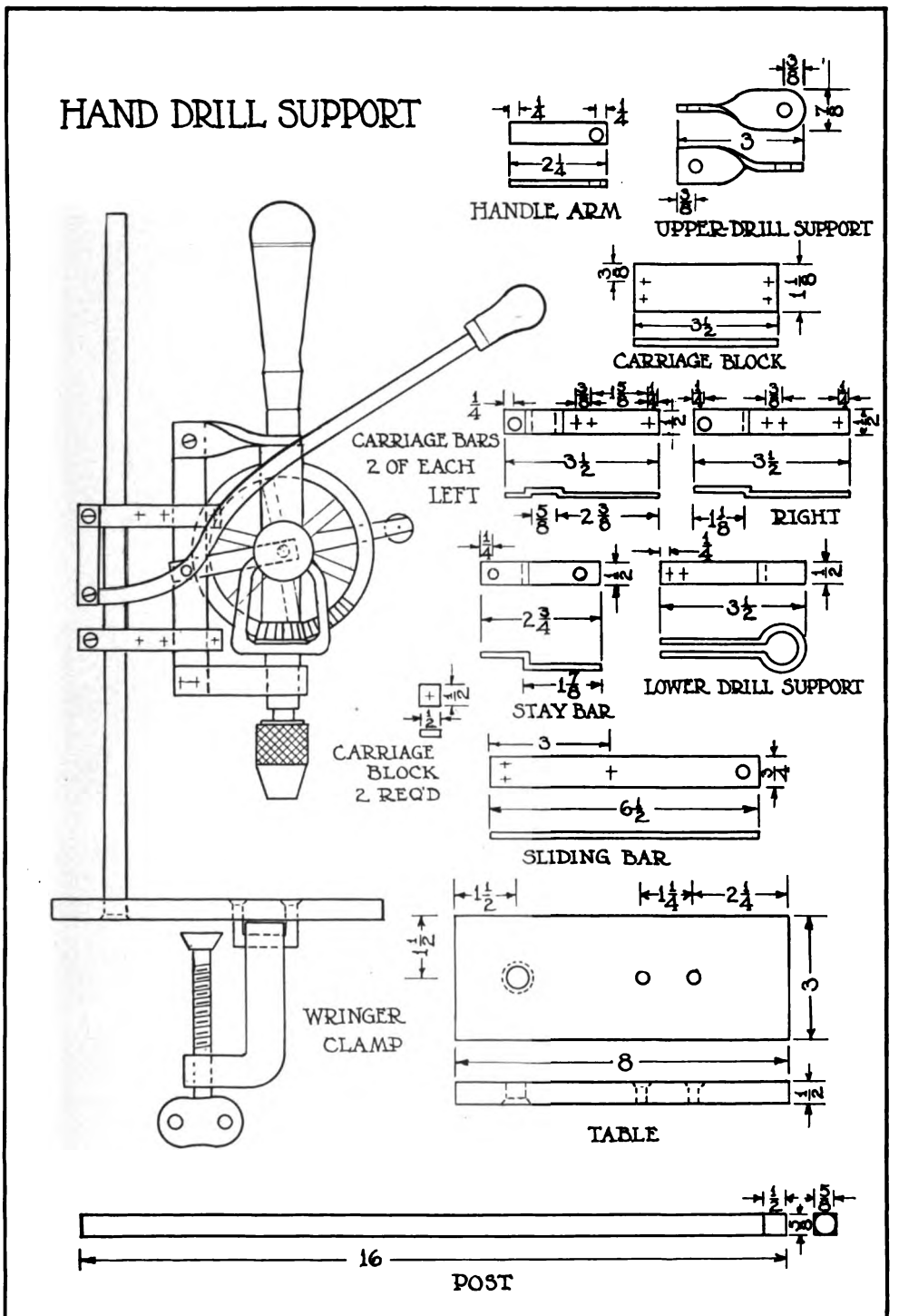

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tion drill and center reamer on account of its fragility and expense. Boys will let them stick in the ends of their jobs quite frequently.

3. Facing ends (between centers).

4. Turning to required diameter (if stock is over size).

5. Knurling.

6. Turning ferrule ends.

7. Parting (either hold in chuck and use a parting tool, or cut with a hack-saw).

8. Facing, spotting, and then drilling to hollow the handle.

9. Rounding end as shown.

10. Drilling end to receive screwdriver shank. This hole should be about .006" to .010" smaller than the diameter of the shank, and should be drilled through to meet the large diameter hole.

11. Heat ferrule end to light cherry red and drive handle over the shank of the screwdriver. To do this the shank is held firmly in vise, allowing it to protrude beyond top of vise-jaws as far as you wish it to enter the handle (a distance C).

12. Forge screwdriver end.

13. Harden screwdriver end.

14. Grind screwdriver end.

15. Polish screwdriver shank, ferrule and heel of handle.

16. Temper screwdriver end to a very dark blue or purple. (This depends on the amount of carbon in the steel).

Precautions: Great care should be exercised in drilling the hole that receives the screwdriver shank; if the lips of the drill are not properly ground, though the drill is the right diameter, it will cut large. The teacher should guard closely against just such an occurrence. Another place where the student will have to exercise great care is in the knurling. If the knurling tool is not properly started the knurl will cross-cut, and of course, make a poor appearing job. Better practice on a piece of scrap metal before knurling the handles.

In the 11th operation do not strike end of handle to drive same over shank and thus mar it, but use a rod somewhat smaller in diameter than the large hole, thus applying the pressure where it is needed. (See drawing)

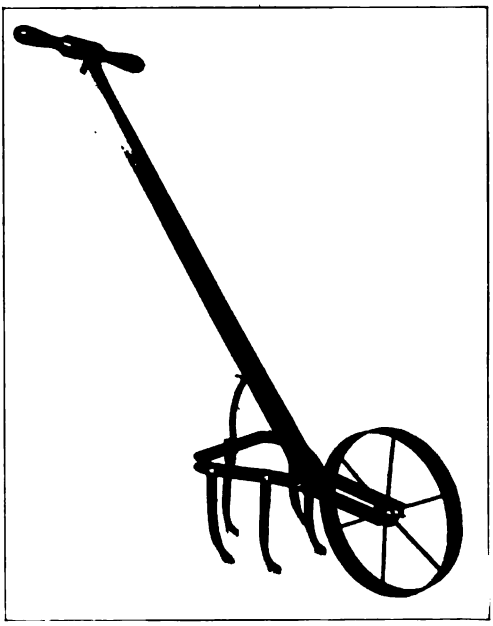
If these instructions are properly carried out they will prove valuable experience for the student, and make the department two screwdrivers richer per pupil.

HENRY P. BOETTCHER,
Instructor, Machine Shop Practice,
Public School No. 24,
Jersey City, N. J.

HAND CULTIVATOR

This was made by boys in the Lane Technical High School, Chicago, for use in their war gardens.

The wheel has a cast iron hub with a ⅜" iron axle cast in place. The frame is made of ⅞" channel iron which may be bent to shape without being heated. The ¾" notches are made



with a set hammer and serve to hold the teeth very rigidly. The handle is easily adjusted to any height so that the tool is practical and efficient.

—GEORGE G. GREENE,
Lane Technical High School, Chicago.

INK BOTTLE HOLDER

Every mechanical drawing room has had trouble with upset ink bottles. The drawing herewith shows one of the most satisfactory devises. It not only does the work, but provides a splendid project in the machine shop. The material used was brass or bronze; it was finished either by polishing, or by nickel plating.

C. M. HEWITT,
Bradley Institute,
Peoria, Ill.

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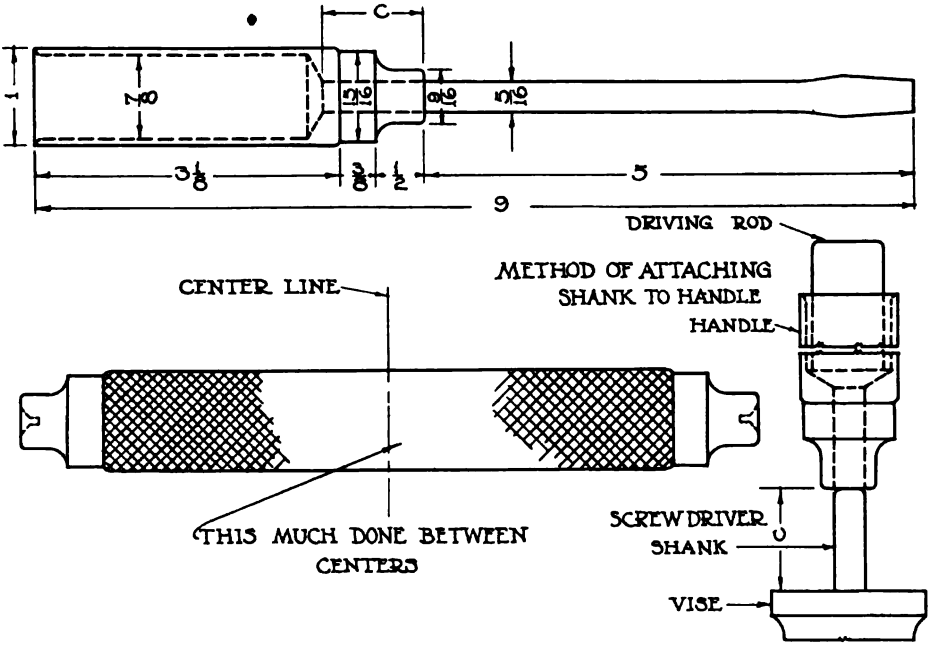
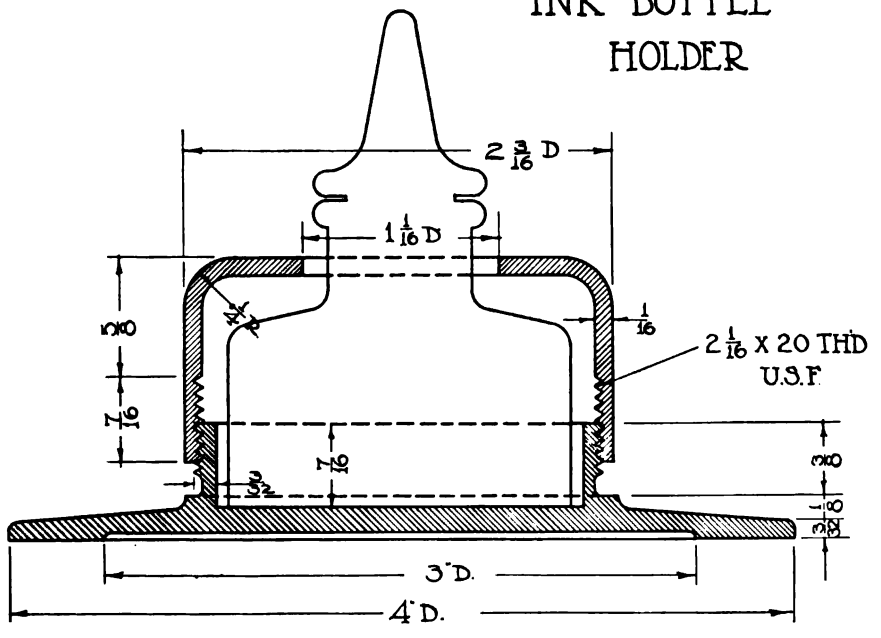
ALL METAL HOLLOW HANDLE SCREW DRIVER



INK BOTTLE HOLDER



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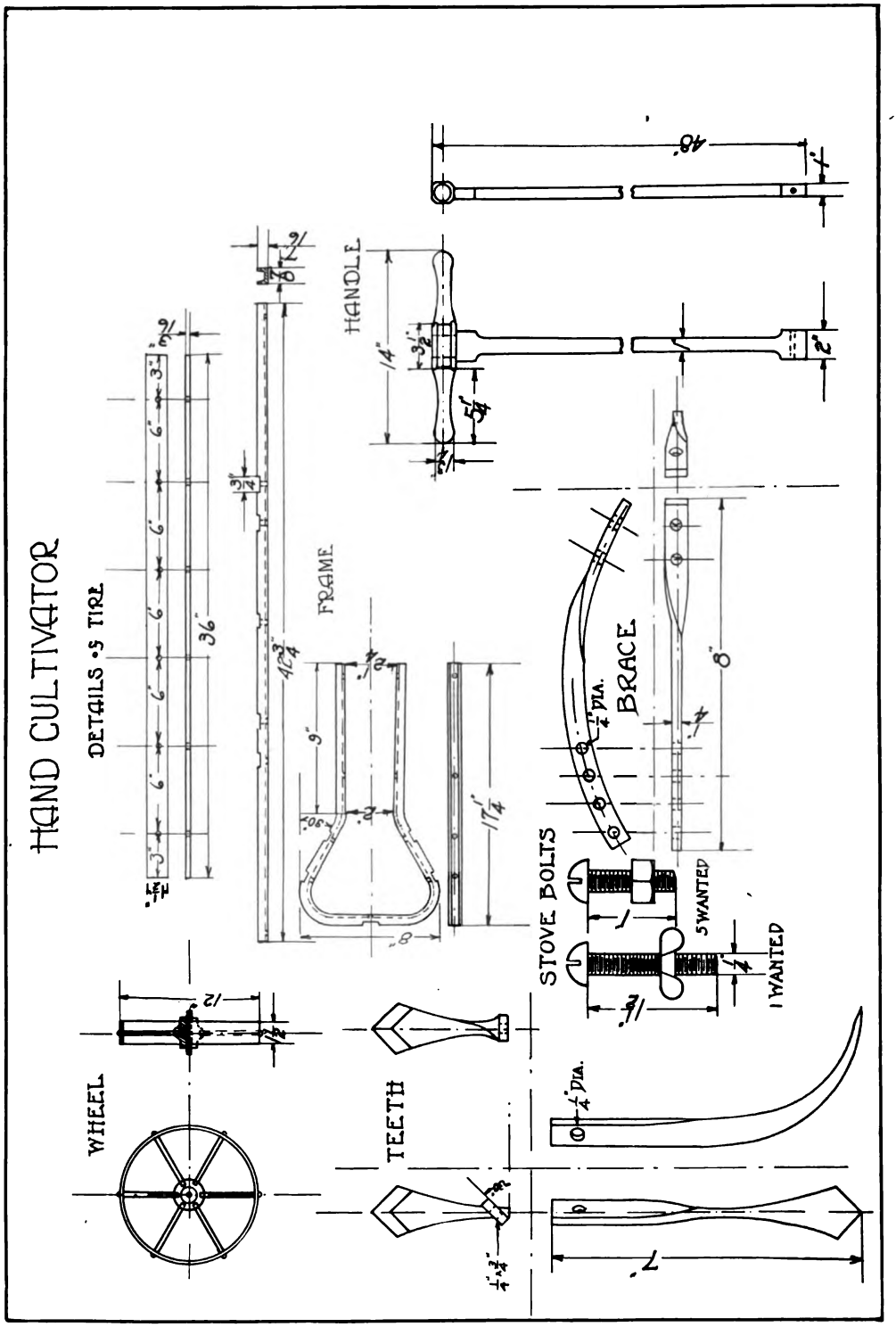

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CURRENT PUBLICATIONS

Elements of Plumbing, by Samuel E. Dibble, head of Sanitary Equipment and Installation Department, Carnegie Institute of Technology. McGraw-Hill Book Company, New York, 1918. Size, 5x7¼ in., 170 pages, price, $1.50.

This course is based on the course at Carnegie Institute of Technology. The problems are practical yet elementary. The book is intended for beginners. It is the result of years of observation and experience and ought to meet a real need. The book is well illustrated and well arranged; it covers gas fitting and steam fitting as well as lead and tile piping. The last chapter is given to plumbing codes.

Problems in Woodwork in Combination with other Materials, by Edward F. Worst, supervisor of elementary manual training, Chicago, Ill. The Bruce Publishing Co., Milwaukee, Wis. Size, 10x7½ in. oblong; 242 pages; price, $1.75.

As indicated by its title the characteristic feature of this book is the combination of wood with other construction materials. For example, the second chapter deals with problems combining metal with wood, the third chapter uses ash splints, the fourth cane, the fifth rush, the sixth hickory splints, the seventh upholstery, the eighth round and flat reed, and the ninth textiles. This combination of other materials with wood gives special opportunities for the development of design as a vital element in the manual training work. The final problem in the book is the construction of a loom suitable for school or home use. The working drawings of the book are clear and good in technic.

The author rightly says that "no set of models can express the manual training idea," but it is clear that his aim in this book is child development in a broad, cultural way, rather than the acquisition of specialized skill in woodworking. Whether he has gone too far in this direction would doubtless depend upon the breadth of training of the teachers who are to use it. Mr. Worst doubtless realizes this difficulty when he points out that no "definite course of work is applicable to all the diverse conditions to be met with in one city, or even in one school; consequently, the exercises are arranged merely as a basis from which to work." No teacher should slavishly follow the book, but any strong teacher can get valuable problems and suggestions from it.

Carpentry for Beginners, by John D. Adams. Published by Moffat, Yard & Co. New York, 1917. Size, 5¼x8¾ in., 248 pages; price, $1.50 net.

This is not really a book on carpentry at all, but a collection of drawings of simple objects, with notes on their construction. It is written especially "for the young craftsman."

Jewelry Making and Design, by Augustus F. Rose, head of the departments of Jewelry and Silversmithing, Rhode Island School of Design, Providence, R. I., and Antonio Cirino, assistant in the same department. Published by the Metal Crafts Publishing Co., Providence, R. I., 191?. Size, 6x9 in.; 463 pages; price, $5 net.

It is seldom that one finds any department of craft work presented so clearly in all its details and in such attractive form as in this excellent book. Without doubt it must be regarded as the standard book of reference for the teacher and student of jewelry making.

The book shows how jewelry is designed, discusses the limitations and possibilities of the problem, then shows how the design is executed by simple progressive steps. In many cases it is hardly necessary to read the text because the illustrations show in detail the processes involved.

The hundreds of finished pieces of jewelry illustrated in the book are simple yet characterized by a mastery of those principles of design that gives them artistic distinction. Indeed the whole book breathes an atmosphere of artistic refinement. It is beautifully put together with many splendid color plates and over 600 illustrations. It is bound in art buckram, printed in a good type and on the best coated paper. A glance at the book convinces one that neither time nor money has been spared in the making of it.

Home Labor Saving Devices, by Rhea C. Scott, instructor in home demonstration work, George Peabody College for Teachers, Nashville, Tenn. Published by J. B. Lippincott Company, Philadelphia. 5¾x8¾ inches; 117 pages; price, $1.00 net.

This book describes numerous home-made devices for labor saving especially adapted to rural communities. It includes kitchen conveniences, dining-room conveniences, porch equipment, poultry devices, dairy devices and miscellaneous equipment, which can easily be constructed with

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few tools and without a great amount of mechanical skill. The book is illustrated with both drawings and half-tones and contains many suggestions for rural schools.

Thrift Clothing by Mrs. Anna Hedges Talbott, State Specialist in Vocational Training for Girls, Flushing, L. I. N. Y. 6x9 inches; 30 pages; price 50 cents.

This is a timely collection of problems in sewing. It is extremely practical, and a guide for schools trying to meet present-day needs.

Exercises in Lettering, by George G. Greene. A vest pocket booklet giving a course of problems in slant Gothic lettering. Published by the Prang Company, Chicago. Price, 10 cents.

Study of Animal Families in Schools, by Laura B. Garrett. Bulletin No. 2. Published by the Bureau of Educational Experiments, 70 Fifth Ave., New York, N. Y. Price 10 cents.

This pamphlet contains many suggestions concerning methods of procedure in stimulating the study of animals. It recommends that children be encouraged to build the homes for the animals, and then to bring their pennies to buy food for their pets.

RECEIVED

Vocational Training in War Time. Bulletin No. 27. Published by the National Society for Vocational Education, 140 W. 42nd Street, New York, N. Y. This Bulletin contains papers by E. C. Felton, Hugh Frayne, E. E. McNary, H. W. Kavel, Lewis A. Wilson and several other men and women interested in industrial education.

Problems of Administering the Federal Act for Vocational Education. Bulletin No. 26. Published by the National Society for Vocational Education, 140 W. 42nd Street, New York, N. Y.

The Evolution of National Systems of Vocational Reeducation for Disabled Soldiers and Sailors, by Douglas C. McMurtrie. A timely and authoritative Bulletin published by the Federal Board for Vocational Education, Washington, D. C. It contains 320 pages and several plates of illustrations. The information was gathered from official sources in Europe and in Canada.

Our Flag. An attractively illustrated pamphlet published by the Ben Franklin Club of East Technical High School, Cleveland, Ohio.

Fifteenth Annual Report of the Principal of Hampton Institute, Hampton, Va. Contains much historic information concerning the Institute.

The Artisan. Published by Dunwoody Institute, Minneapolis. The June number is devoted to the interests of the Dunwoody Naval Training Schools.

Continuation and Cooperative Classes. One section of the Annual Report of the Superintendent of Public Schools, New York City. Contains much interesting data and several illustrations.

Prevocational and Vocational Schools. A section of the Annual Report of the Superintendent of Public Schools of New York City for the year 1916-17. Illustrated with several half-tones of students at work.

Grading Pupils in Vocational Subjects, by D. J. MacDonald, Associate Professor of Vocational Education, Indiana University, Bloomington, Ind. Price 15 cents. Contains forms for record cards and a discussion of grading.

The Conifers of the Northern Rockies, by J. E. Kirkwood, Professor of Botany in the University of Montana. Bulletin No. 53, 1917. Issued by the U. S. Bureau of Education, Washington, D. C. A well illustrated pamphlet of 61 pages.

Directory of Vocational Education. A pamphlet issued by the U. S. Bureau of Education, Washington, D. C., giving the names of state and other officials having to do with vocational education.

Vocational Education in New Mexico. Vocational Bulletin No. 1. Issued by the State Department of Education, Santa Fe, N. M. Contains the plans for vocational education under the provisions of the Smith-Hughes Act.

Emergency War Training for Airplane Mechanics. Bulletin No. 12. Issued by the Federal Board for Vocational Education, Washington, D. C. Contains teachers' outlines of courses.

The Worker and the Wage System. Community Leaflets Nos. 22 and 23. Edited by Professor Charles H. Judd, and published by the U. S. Bureau of Education, Washington, D. C.

Vocational Education. Bulletin No. 1. Issued by the State Board for Vocational Education, Des Moines, Iowa.

Experimental Schools. Bulletin No. 4. Issued by the Bureau of Educational Experiments, 70 Fifth Ave., New York, N. Y. Price, 10 cents.

Psychological Tests. A bibliography published by the Bureau of Educational Experiments, 70 Fifth Ave., New York, N. Y. Price, 25 cents.

The Concrete Builder. Published by the Portland Cement Association, Chicago, Ill. The May number contains drawings and photographs of a concrete poultry house and a concrete storage cellar, which may be interesting to teachers of manual training.

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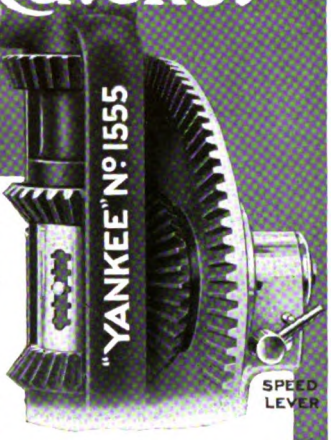

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cation of our returned army as is necessary to restore them to civil employment. It carries an initial appropriation of $6,000,000, and as a bill is surpassed only by the war risk insurance act in its ample provisions for the welfare of the fighting men.

The appropriation is apportioned as follows: For quarters, equipment and facilities for instruction, $250,000; for instructors, supervisors and experts, $545,000; for traveling expenses of disabled persons taking courses, $250,000; for tuition of persons taking the vocational rehabilitation course in public and private institutions other than those specially provided, $545,000; for placement and supervision after placement of persons vocationally rehabilitated, $45,000; for investigations, reports and preparation of special courses, $55,000; for special mechanical appliances necessary for disabled men, $110,000; for administrative expenses, $200,000.

Returning blinded soldiers, sailors, and marines are being received now for vocational instruction and rehabilitation at Hospital Training School, General Hospital No. 7, the former home of Mrs. T. Harrison Garrett, at Baltimore, Md. The hospital is outfitted to accommodate 250 men and has large recreation fields and an extensive acreage in gardens.

The blinded soldiers from overseas will be discharged from the hospital after they have been taught a practical self-supporting trade, have been put in good physical condition, and taught to read standard printing in raised type. The men will be sent to their own home communities and placed in the trades for which they have been trained. Red Cross workers will continue to watch after their welfare.

One of the most interesting institutions yet established as the result of the war is the Red Cross Institute for Crippled and Disabled Men, situated at 311 Fourth avenue, New York city. There four schools, the nuclei of others that are to be organized in Chicago, St. Louis and other places, are now under way teaching the manufacture of artificial limbs, linotype and monotype operating, mechanical drafting and oxyacetyline welding. These four trades were selected for the New York school because they were in fields that were not overcrowded. A soldier or sailor thus may be taught a vocation that will pay him $4 to $8 a day.

Douglas C. McMurtrie, director of the Institute, a graduate of the Massachusetts Institute of Technology and in charge of the department of printing at Columbia University, has made a study of the social and economic reconstruction of cripples for more than eight years.

Surgeon General Gorgas, with the approval of the Army General Staff, has announced the completion of plans for the physical reconstruction of disabled soldiers in the general military hospitals. These plans are formulated with a view to close cooperation with the War Department Committee on Education and Special Service in the work of restoring men to full or limited service, and with the Federal Board of Vocational Education, which is authorized by the law to provide vocational training for disabled men as they are discharged from the Army and Navy.

Surgeon General Gorgas has designated the following general military hospitals for the work of physical reconstruction: Walter Reed General Hospital, Washington, D. C.; General Hospital No. 2, Fort McHenry, Md.; General Hospital, No. 3, Colonia, N. J.; General Hospital No. 6, Fort McPherson, Georgia; General Hospital No. 7, Roland Park, Baltimore (for the blind); General Hospital No. 8, Otisville, N. Y.; General Hospital No. 4, Fort Porter, N. Y.; General Hospital No. 9, Lakewood, N. J.; General Hospital No. 11, Cape May, N. J.; General Hospital No. 16, New Haven, Conn.; General Hospital No. 17, Markelton, Pa.; Letterman General Hospital, San Francisco, Cal.; United States Army Hospital, Fort Des Moines, Ia.; General Hospital, Fort Bayard, N. M., and Plattsburg Hospital, Plattsburg, N. Y.

MINIMUM SALARY FOR TEACHERS

Arthur E. Holder, representative of Labor on the Federal Board for Vocational Education in an address given before the Department of Vocational Education and Practical Arts of the National Education Association at the Pittsburgh meeting, said of teachers:

"They have earned their pay many times over. They deserve a raise in wages—a good substantial raise—over one hundred per cent in many localities. Nothing less than $1,200 per year will be an adequate or just minimum rate for our teachers. But it can never be secured by teachers, as units, or by individual effort. They must learn how to organize and protect their trade,

(Continued on p. XV.)

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FIELD NOTES

(Continued from p. XIV.)

occupational, or professional interests like other people; they must combat opposition; they must first learn how collectively to stand upon their own feet and depend upon their own resources."

ANOTHER APPRENTICESHIP COURSE

Stanley J. Steward, of New Haven, Conn., has been placed in charge of the industrial school which is just being opened at the E. & T. Fairbanks scale plant, St. Johnsbury, Vermont. Mr. Steward has had sixteen years' experience as a teacher of mechanical subjects; he is an expert steam and gasoline engineer, and has held a mariner's license for ten years.

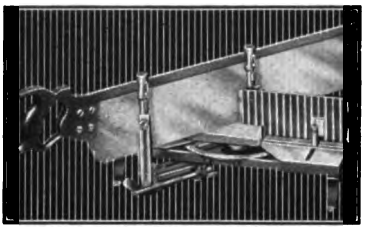
Boys may choose any line of work in the shops that they like, and the instruction they receive will serve as a period of apprenticeship. Under special supervision each boy will pass from one department to another until he becomes familiar with the machinery and work of each. At the end of four years he will be well equipped for industrial leadership. The boys' general education will be continued along the lines ordinarily required for lifework, namely, mathematics, industrial history, English, physics, community civics, commercial geography, mechanical drawing, economics and kindred subjects.

Besides giving the students an opportunity to become proficient in the work of the shops, and still continue their education along ordinary lines, they will also become wage earners. The Fairbanks Company has agreed to pay each boy for the first year 12 cents an hour for every hour the boy actually works, 16 cents the second year, 20 cents the third year and 24 cents the fourth year, making an average of $270 a year for each boy for the four years.

A SCHOOL IN ANOTHER FACTORY

Norval F. Fultz, supervisor of vocational training in the public schools of Anderson, Indiana, has resigned his position to become the director of welfare work and instruction in the Remy Electric Plant of the United Motors Corporation, Anderson.

Mr. Fultz has been connected with the Anderson schools for eight years, and has done especially fine work in building up a model scheme



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FIELD NOTES

(Continued from p. XV.)

of vocational training for a small manufacturing city. Mr. Fultz has had unusual influence over the young men of the city, and will doubtless continue to exert this same influence in his new position.

The Remy plant employs 2,000 persons, and Mr. Fultz will find plenty to do. The work under Mr. Fultz will occupy a new building, 40 ft. wide and 144 ft. long; this has been built expressly for the welfare and vocational school work of the corporation. For several years, the Remy plant has been known for its interest in vocational education, and its manager, J. G. Wood, has been one of the most enthusiastic supporters of public school vocational work in Anderson.

FEDERAL FUNDS APPORTIONED

The state apportionment of the Federal fund for vocational education for 1918-19 has just been announced. The total amount distributed to the various states is $2,307,460, and each state participating has appropriated for vocational education an amount equal to its share. The fund has been distributed as follows:

Maine, $17,920; New Hampshire, $15,000; Vermont, $15,000; Massachusetts, $86,138; Rhode Island, $19,304; Connecticut, $31,245; New York, $226,343; New Jersey, $62,776; Pennsylvania, $186,786; Delaware, $15,000; Maryland, $31,250; West Virginia, $29,417; Ohio, $115,622; Kentucky, $55,701; Michigan, $67,539; Indiana, $64,578; Wisconsin, $55,843; Illinois, $137,581; Minnesota, $49,557; Iowa, $52,530; Missouri, $78,775; North Dakota, $17,808; South Dakota, $17,708; Nebraska, $28,014; Kansas, $39,867; Oklahoma, $38,655; Montana, $15,000; Wyoming, $15,000; Colorado, $19,273; New Mexico, $15,000; Idaho, $15,000; Utah, $15,000; Arizona, $15,000; Nevada, $15,000; Washington, $27,614; Oregon, $16,142; California, $58,021; Virginia, $48,288; North Carolina, $51,191; South Carolina, $36,189; Georgia, $60,948; Florida, $18,857; Tennessee, $51,011; Alabama, $49,765; Mississippi, $42,888; Arkansas, $37,874; Louisiana, $39,085; Texas, $91,361.

SHORT-UNIT COURSES FOR ADULTS

During the past year 50,000 Massachusetts

(Continued on p. XVII.)

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FIELD NOTES

(Continued from p. XVI.)

boys and girls under sixteen years of age have left school to enter employment. Since this is twice the number of any previous year, the problem is at once acute. To meet the situation, compulsory continuation schools are being advocated by Dr. Payson Smith, commissioner of education, and by other leading educators and members of the state board of education.

A further forward educational movement in the state is the introduction of short unit industrial courses for adults which are to be given in day schools during the coming year. Recent state legislation has made this possible. Heretofore day schools have been closed to persons over 25 years of age and evening industrial instruction had to be an extension of work engaged in during the day. Now these restrictions are removed and an adult may be taught in either a day or evening school and in any industry he may elect.

WISCONSIN NOTES

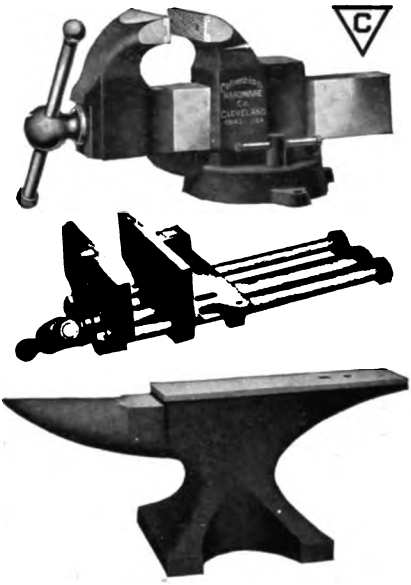
There are now 130 high schools in Wisconsin receiving special state aid for manual training courses, as compared with fifty schools seven years ago. Besides these there are a large number of state graded schools and rural schools in the state that now give courses in manual training. All these schools are under the supervision of the state supervisor of manual training, J. M. Dorrans, who devotes a large proportion of his time to visiting these schools and giving practical help to the teachers. To give these schools further help, and to take further steps toward a higher standard of manual training instruction in the state, Mr. Dorrans prepared a suggestive outline in woodwork and mechanical drawing which has been printed and distributed by the State Department of Public Instruction. It is worthy of study by any teacher of manual training in any state.

Thomas Diamond, instructor in the manual arts department at the University of Wisconsin, took the officers' training course at Fort Sheridan during the summer with a view to giving military instruction the coming year as a part of his work at the university.

There are in the neighborhood of 35,000 boys and girls over 14 years of age in the State of Wisconsin who are in the industries and attending part-time schools.

(Continued on p. XVIII.)

COLUMBIAN



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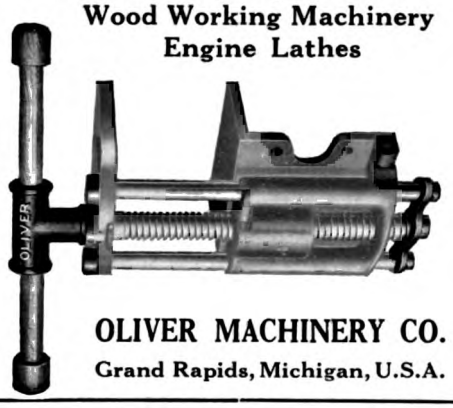

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FIELD NOTES

(Continued from p. XVII.)

Frank L. Glynn, state director of vocational education for Wisconsin, has resigned to become director of vocational training in the United States Aeroplane Works, Buffalo, N. Y. He is succeeded by John Callahan of Menasha.

E. E. Gunn, director of the Green Bay Vocational School, has undertaken war emergency educational work under the Wisconsin board of vocational education.

The Beloit Vocational School is giving machine shop practice to the men who are attending the motor truck repair school at Beloit College. The men attend the shop class from 8:30 A. M. to 4:30 P. M. for ⅛ of the time. Harry Oelschlager is the instructor.

J. A. Lund, supervisor of manual training in Reedsburg has resigned to accept the directorship of vocational work at Beaver Dam.

Fred Wright, instructor of machine shop work, West Allis, has resigned his position to teach general machine shop work at Janesville.

Albany high school is planning to add manual training work in the fall.

Thomas A. Berg, supervisor of manual training in Cumberland, has been elected to the principalship of the school in that place.

H. A. Magoon has been elected to the position of instructor in manual training at Brodhead.

R. M. Naset has resigned as teacher of manual training at Mayville to accept a similar position at Prairie du Chien.

Manual training will be introduced in Hudson during the coming year with a special teacher to supervise the work.

Allen Ohmart, supervisor of manual training at Neillsville, has resigned his position.

Gerhard Zimmerman, in charge of the manual arts work at Shawano, has resigned to take up similar work at Janesville.

E. P. Wright, River Falls, has resigned his position to take up farming in Texas.

O. C. Hansen, supervisor of manual training at Stanley, has enlisted in the signal corps and is receiving training at Dunwoody Institute, Minneapolis.

George W. Frey has been appointed supervisor of manual training at Ripon.

Earl W. Thrall has resigned his position at

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FIELD NOTES

(Continued from p. XVIII.)

Winneconne to become supervisor of manual training at Beloit.

MINNESOTA NOTES

At the last meeting of the Manual Arts Club of Minneapolis, held in May, H. L. Freeland, of East High School, was elected president. Mr. Freeland's election insures a year of good work for the club.

A development in the Minneapolis field which is very pleasing to the industrial arts teachers is the appointment of John N. Greer, principal of the Central High School, as assistant superintendent of schools in charge of vocational training. The teachers of the department feel that there is no one whom they would rather work under than this progressive, constructive man. Mr. Greer spent part of a well earned vacation travelling through the East and visiting a number of industrial schools.

C. A. Zuppann, director of technical courses at the Central High School, spent the summer in the munitions plant of the Minneapolis Steel and Machinery Co. In this connection Mr. Zuppann reports to us that the Steel and Machinery, as it is commonly known, is planning a series of scholarships for the Minneapolis high school boys. We will be able to give more details when the plans are further developed.

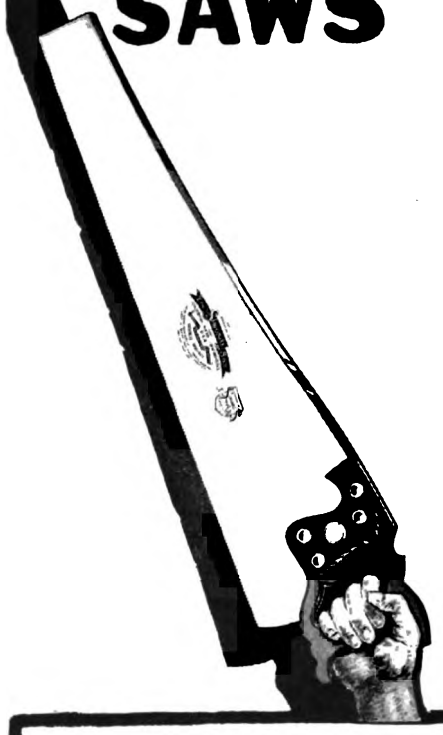
Dunwoody Institute was the first school in the United States to engage in war training. At the present time the Institute is training both Navy and Army men (drafted). About 1700 Navy boys are in attendance now. During the year (Aug. 1st, 1917 to August 1st, 1918) 8,500 men attended the Institute, in all departments. This included Navy, Army, and regular school students. Over 2,000 men are in service, some in France and some on the water, while others are in the various camps on this side. Twelve hundred Navy boys are fed in the building, while all others, including the Army detail, are supplied from the Dunwoody bake shop, altho fed elsewhere.

In addition to the great service of training men Dunwoody has acted as a recruiting station and has enlisted more than 1,000 men who were sent into service.

The University of Minnesota has been training drafted men in several lines. They have just

(Continued on p. XX.)

SIMONDS SAWS



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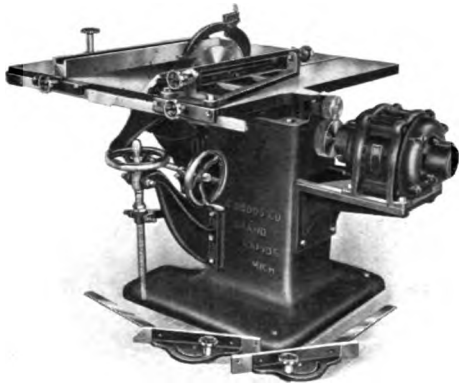

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FIELD NOTES

(Continued from p. XIX.)

made a contract to train 900 men every two months for ten months. New buildings for housing and caring for the men are being constructed. At the College of Agriculture the same thing has been going on as on the main campus.

—J. L. PEMBERTON.

GALESBURG, ILL.

Some important changes are taking place in the manual training work in Galesburg, Illinois, this year under the direction of G. H. Bridge. The amount of work in the high school has been increased so that it is now possible for a student to take nine credits of shopwork and mechanical drawing; whereas, previously it has been possible to take only four credits.

The course includes woodworking the first year, pattern making and wood-turning the second year, forging and machine shop the third and fourth years. Students who take shopwork are required to take mechanical drawing also. The time is divided equally between the two departments of work. Students who take three double periods in shopwork the first semester take two double periods the second semester; these alternate with the drawing.

The staff of the department has been increased to four. They are as follows: For mechanical drawing, G. H. Bridge; for high school woodworking, Roy S. Landon; for printing, machine shop work and forging, Joseph Blum; and for grammar grade manual training, Mr. Reedman.

The last year a class in commercial telegraphy was started by Mr. Bridge as a war measure. Fortunately, Mr. Bridge had previous practical experience in telegraphy and was able to teach the class himself. During the coming year students will be given the opportunity to elect radio work.

As a result of plans now being considered by the Iowa State Board of Vocational Education, representatives of the State Council of Defense, the extension department at Ames, and a federal agent of the Department of Trades and Industries, every high school in the state having the necessary equipment is likely to be used for the training of war registrants.

The training will embrace radio buzzer work,

(Continued on p. XXI.)

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FIELD NOTES

(Continued from p. XX.)

electrical work, mechanics, auto engineering and other lines of industrial work. All classes will be conducted in the evening, and instructors will be practical shopmen. Any registered man may enroll and receive free instruction under the plan proposed.

Early last spring, the Junior Red Cross of New Jersey requested the Industrial Education Division of the State Department of Public Instruction to cooperate in urging each district in the state to make articles of furniture for rest houses being erected in the various cantonments for convalescent soldiers. E. A. Reuther, assistant in industrial education, reports that every district asked to cooperate responded cordially. The districts included were: Newark, Jersey City, Bayonne, West Hoboken, Camden, West New York, Hoboken, Union Hill, Bloomfield, Passaic, East Orange, Orange, Paterson, Ridgewood, Montclair, Plainfield, Trenton, Westfield, Rahway, Linden, Roselle Park, Elizabeth, Perth Amboy, Hackensack, Woodbridge.

Donald B. Ferguson, who had charge of the industrial summer school work in St. Paul the past summer, made provisions for seventy-five boys, and seventy-four were enrolled the first week. Twenty-five teachers' desks and a large number of manual training benches were included in their four weeks' work. The boys worked on a factory schedule, beginning at 8:00 A. M. and continuing until 2:30 P. M., with a half-hour for lunch.

Jesse F. Kolb, instructor in the high school at Salt Lake City, has been promoted to the position of director of vocational education for the city. This action is taken as one of the results of the passage of the Smith-Hughes Law. Mr. Kolb is an expert machinist and a strong teacher.

Alvin E. Dodd has been called to Washington as executive secretary of the Committee on Classification of Personnel in the Army under the Adjutant General. This committee is responsible for the occupational classification and assignment of all drafted men for their placement in those army organizations where their special qualifications are most needed.

(Continued on p. XXII.)

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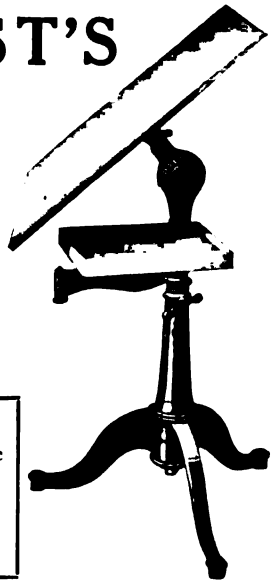

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FIELD NOTES

(Continued from p. XXI.)

R. J. Leonard has resigned from the Federal Board for Vocational Education to become professor of vocational education at the University of California.

James A. Pratt, formerly of the Williamson Free School of Mechanical Trades, has been appointed director and superintendent of the Delgado Central Trades School for Boys, which is to be erected in New Orleans, La., for the establishment of which Isaac Delgado left $1,000,000 to the city of New Orleans.

Robert O. Beebe, of New Haven, Conn., has been appointed director of the Essex County vocational schools, New Jersey, to succeed Wesley A. O'Leary, who is now assistant commissioner of education of New Jersey, in charge of vocational work.

The summer courses in the College of the City of New York were free to enlisted men in the Army and Navy. Some of the courses were especially planned to meet war service needs, and many enlisted men, or those expecting to be called to service, were enrolled for the courses in ship building, navigation, airplane mechanics and military surveying.

Otis R. Thayer has resigned his position as instructor in manual training at Easthampton, Mass. to accept a similar position in Hill Institute, Florence, Mass. Mr. Thayer organized the work in Easthampton, at first dividing his time with West Springfield; later giving his entire time to Easthampton.

Another city that plans to bring its educational facilities within the grasp of factory workers is Terre Haute, Indiana. Workers between the ages of 14 and 25, including both boys and girls, are eligible, and the work is to be done in the daytime on the employers' time. This is another case where the operation of the Smith-Hughes Bill makes possible the extension of educational opportunities.

Alfred P. Fletcher, formerly assistant superintendent in charge of vocational education in Rochester, New York, has been appointed to the same position in Cleveland. Steps are being taken for several forward movements in the

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FIELD NOTES

(Continued from p. XXII.)

Cleveland schools. Among others, plans have been made for establishing factory schools in hundreds of industrial plants in the city.

George J. Loewy, formerly principal of the Murray Hill Vocational School and the Brooklyn Vocational School, has been appointed director of vocational activities in New York City at a salary of $6,500.

John D. Shoop, who has been superintendent of the Chicago Schools for several years, died suddenly in the Park Hotel, Chicago, August 8.

At the Pittsburgh meeting of the National Education Association, Dr. George W. Strayer, of Columbia University, was elected president for the coming year.

W. J. Breit, instructor in manual training at the Agricultural High School, Magnolia, Ark., becomes superintendent of schools at Arkadelphia, Ark., at a greatly increased salary.

J. W. McCreery, assistant in manual arts at the University of Missouri and instructor in the Columbia High School, has recently moved to Savannah, Ga., where he is in charge of shopwork in the high school.

Homer H. Buescher, a senior in manual arts at the University of Missouri, has been appointed instructor in manual training at the Columbia High School.

THE NEXT ANNUAL CONVENTION

The next annual convention of the National Society for Vocational Education will be held in St. Louis, Mo., February 20-22, 1919. The next annual meeting of the Department of Superintendence of the National Education Association will be held in Chicago the following week. This will enable members of both organizations to attend both meetings. The year's work of the Society will be planned with St. Louis as the goal.

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TRADE NOTES

SOME manual training teachers may be surprised when they unpack their new supply of small tools this fall, particularly their hammers, braces, pliers, chisels and punches. Instead of the entire metal surface of each tool being polished, as has been the custom for so many years, only the working parts will be polished. Moreover, it has not been possible to exercise such a wide choice of patterns as heretofore. These are war measures upon which tool manufacturers have agreed, and the schools will gladly cooperate with them. Vaughan & Bushnell Manufacturing Co., Chicago, have reduced their line of hammers from over 300 patterns to 35. Only the striking face of hammers will be polished, the remainder will be finished black. Other articles which they manufacture, such as braces, will be finished in white nickel instead of buff nickel. The saving in finish and elimination of sizes will help the volume of production from 33⅓% to 50%, and will reduce the clerical and detail work thruout the office and factory to an appreciable extent. This is a "win the war" program which in no way lessens the working qualities of tools, and when the demands on labor and material in other directions are so urgent, the finish of tools loses its importance.

One of the newer subjects to be introduced into our schools is oxy-acetylene welding, and those contemplating teaching this subject will be glad to know where necessary equipment of high grade can be purchased. The Imperial Brass Manufacturing Co., 511 S. Racine Ave., Chicago, make a specialty of equipment for this and kindred work. Their catalog, No. 142, illustrates and describes their complete equipment. In addition, they publish a book on welding and cutting, which should be in the hands of every user or prospective user of a welding outfit. It contains 60 pp. and 40 illustrations, and is written in simple non-technical language. It contains no tedious history of the process nor long involved explanations of the chemical and physical action of the gases. The book sells for $1.00, *but manual training teachers requesting a copy and mentioning this Magazine will receive a copy gratis.*

The Frederick Post Co., Chicago, Ill., are offering Angle Steel Stools, which are excellent for office or factory use. They have a new and ex-

(Continued on p. XXVI.)

Welding Equipment for Schools

More than ever before, the manual training courses of schools and colleges are teaching modern mechanics. The well trained mechanic must know how to weld metals successfully, therefore every manual training department should be given the best equipment possible—

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TRADE NOTES

(Continued from p. XXV.)

clusive feature, namely, a dome shaped foot. This prevents the cutting and marring of floors, and permits the stools to slide over them easily. They are constructed so as to withstand the hardest kind of usage and to give the maximum amount of comfort and efficiency at the same time. Descriptive circular and prices forwarded on application.

The Oliver Machinery Co. is making a new speed lathe (No. 51) that is going to interest teachers in manual training and industrial schools. In the first place it has an alternating current headstock designed for three phase, 60 cycle, 120 volt current, tho it can be purchased with a direct current motor headstock. The motor headstock is enclosed so as to be dust proof and dirt proof. The rear end of the motor is fitted with a combined handwheel and faceplate. This is a new invention and is intended to greatly increase the capacity of the lathe for faceplate work. In this connection, it is noted that the motor has four speeds so that the lathe can be run very slowly for faceplate work.

The controller of the motor is of the same type as the street car controller. It is operated by a handwheel in front of the left leg.

Teachers of metalworking will be interested in a recent book entitled "Sheet Metal Workers' Manual," written by L. Broemel and published by Frederick J. Drake & Co., Chicago. For many years the author of the book has been active with The Peck, Stow & Wilcox Co., of Southington, Conn., the well-known manufacturers of sheet metalworking machinery. The book contains a collection of data on the construction and application of modern sheet metalworking machines and tools. It covers fifteen chapters of over 500 pp. and has more than 400 illustrations. The price of the book is $2.00.

In writing this book, Mr. Broemel was assisted by J. S. Daugherty, of the Carnegie Institute of Technology, Pittsburgh, Pa., who wrote the chapter entitled "Course of Elementary and Advanced Sheet Metal Work and Pattern Drafting." This chapter has been reprinted in book form under the title "Essentials of Sheet Metal Work and Pattern Drafting," price $1.50. The books can be purchased either of the publisher or Peck, Stow & Wilcox Co.

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BOOK NOTES

THE latest book to come to the Editor's table is *Creative Impulse in Industry,* by Helen Marot. This book is the result of a survey made by the author for the Bureau of Educational Experiments, New York city, and it is heartily endorsed by the Bureau. Professor John Dewey says of the book "It is a forceful and vivid presentation of a point of view with respect to education which is as novel as it is illuminating." The book is published by E. P. Dutton & Co., New York. The price is $1.50 net.

In spite of the increased cost of production The Manual Arts Press has made it possible for its customers to secure two of its books at a reduced price. *Problems in Wood-turning,* by Crawshaw has just been issued in heavy paper covers at 50 cents. This should make this valuable book of problems more generally available for shop use. *Problems in Woodworking,* by Murray has been treated in the same way and is now sold at 45 cents.

Every teacher who has been looking for a practical and authoritative book covering elementary problems in sheet metal work will be glad to learn that James S. Daugherty, of the Carnegie Institute of Technology, has prepared a book entitled *Essentials of Sheet Metal Work and Pattern Drafting,* which was published during the summer by the Frederick J. Drake Co., of Chicago. The book is illustrated with many diagrams of tools, processes, and problems. The problems for the book have been selected thru long experience in teaching and after a careful analysis of sheet metal work with the purpose of gleaning what is fundamental for the use of students.

Food Preparation, by Beth Warner Josserand, published a few months ago by The Manual Arts Press is especially timely owing to the emphasis that is now being placed on the scientific selection and preparation of food. Students who have used this laboratory guide and notebook in their course of training in cooking cannot fail to have the scientific viewpoint and the scientific method of approach to present food problems.

The demand for new problems in manual training work grows every year. Teachers have found that old problems, tho good in themselves, become stale if repeated year after year. Such repeated problems fail to call forth the essential vital interest. When a boy says, as one did say not long ago, "I don't want to make that; we have four in our home now," you can be quite sure that it is high time to introduce new models into your course. In line with this thought is the new book *Boy Activity Problems,* by Samuel A. Blackburn, just published by The Manual Arts Press.

NEW BOOK ON DRAWING

Mechanical Drawing Problems, by Berg and Kronquist, was off the press just in time to have the first lot sent to the Stout Institute Summer School, where it was used in Mr. Kronquist's classes. There is every indication that this book is going to meet the present demand for a rich, comprehensive, practical course for high school students. The book is essentially a collection of problems supplemented with text matter rather than a text supplemented with problems. It is not a treatise on the subject of mechanical drawing, but rather a course of problems which, with the aid of an instructor, will enable the student to "learn by doing."

The book is divided into (a) first semester work, (b) second semester work, (c) third and fourth semester work, (d) reference plates, and (e) extra plates. In each semester's work there are required and supplementary problems. The supplementary problems are intended for the pupil who works ahead of the class. They may be substituted for the corresponding required problems or be given as additional problems. They may be used, also, as test problems. There is, therefore, the greatest flexibility possible in their use, tho the problems are arranged in general sequence. Each is selected with reference to embodying some fundamental principle and to affording practice in some phase of practical drafting.

The text matter frequently gives related information concerning the use of the object drawn, method of manufacture, industrial processes, etc. The book embodies up-to-date subject-matter, the best drafting technic and rational methods of teaching.

The book list prepared by the American Library Association contains the following estimate of *Art in Dress,* by Misses Bolmar and MacNutt:

"A practical, clear, up-to-date little pamphlet, which is intended for the use of students in domestic art courses and which will interest many other women. Notes and many illustrations are furnished for the following topics, design based on selection and arrangement, dress and its relation to the wearer, principles of design applied to hair dressing, applied to millinery and to embroidery, color, and home decoration."

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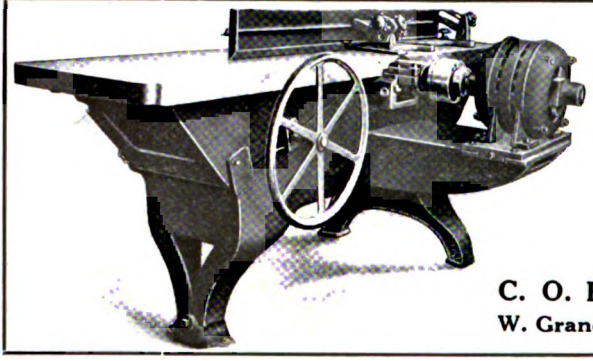

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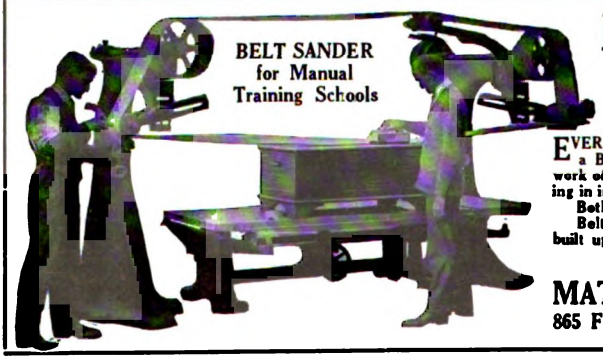

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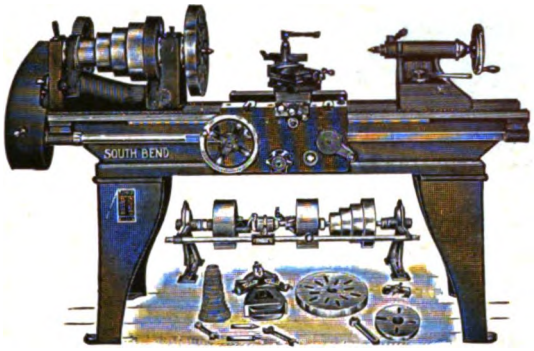

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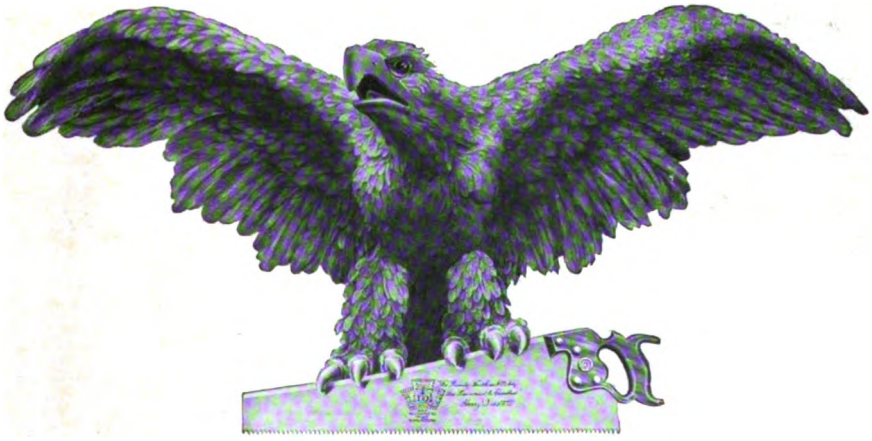

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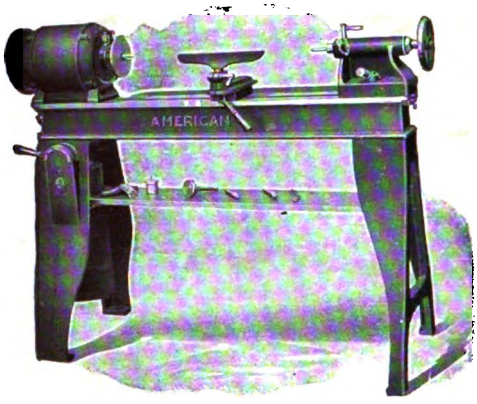

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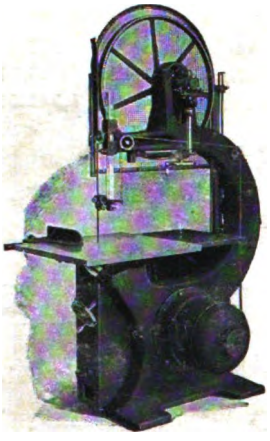

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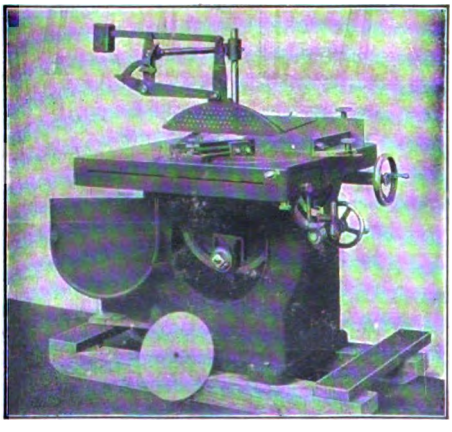

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Vol. XX OCTOBER, 1918 No. 2

MANUAL TRAINING MAGAZINE

DEVOTED TO THE MANUAL ARTS IN VOCATIONAL AND GENERAL EDUCATION

THERE are before us as a people now just two tasks of supreme importance: To win the war for freedom and democracy, and, let us hope, for permanent peace, and to fit ourselves and our children for life and citizenship in the new world which the war is bringing in. Both of these tasks must be performed with singleness of purpose and whole-hearted devotion to the public welfare; and no sacrifice, however great, must be allowed to stand in the way of either.

P. P. CLAXTON
United States Commissioner of Education

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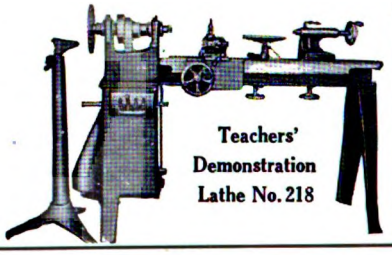

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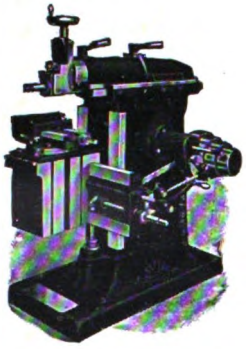

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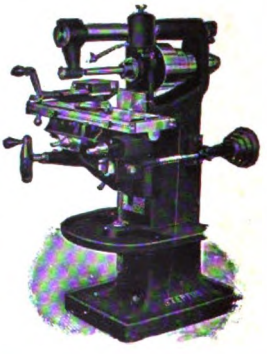

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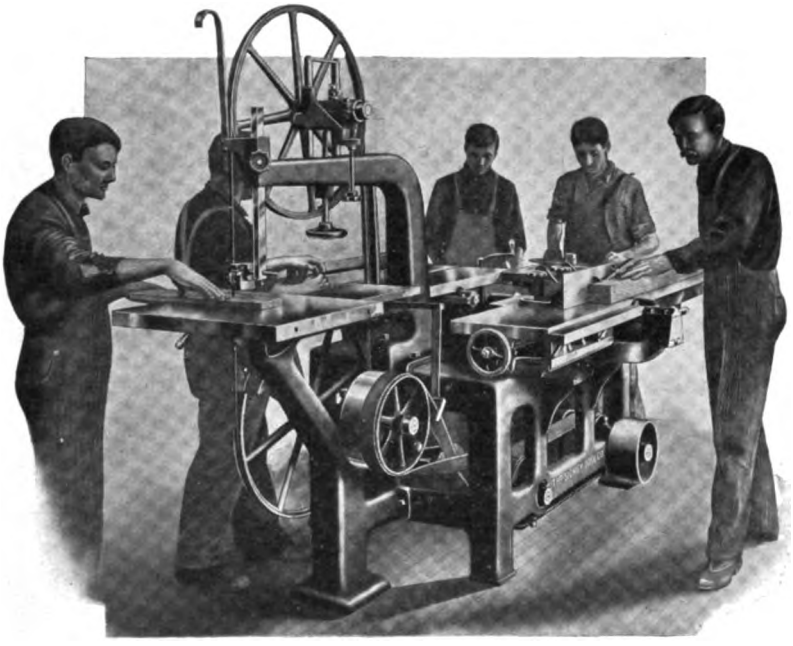

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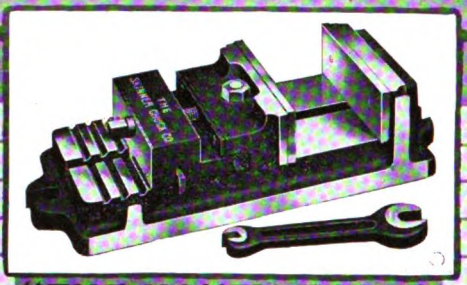

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FIELD NOTES

A GOVERNMENT convalescent hospital is to be erected at Lawrenceville, N. J., which will accommodate 150 patients. It is to be the nucleus of a 500-acre farm where returned soldiers, as they regain health, may be taught dairying, truck farming, and poultry and hog raising. Dean James E. Russell, of Teachers College, Columbia University, is in charge of the farm. He will direct the educational side of the reconstruction work. E. C. Higby, of the Minnesota Agricultural School, is acting superintendent. The dairying activities will require 300 acres, employing from twenty-five to thirty men. It is estimated that 200 more men can be engaged in other agricultural work at the same time.

AROUND NEW YORK

OVER four hundred and thirty-one drafted men have spent the summer studying war trades at the Vocational School for Boys, New York City. They recently completed the eight weeks' course and went to camp fitted for one of the seven trades taught at the school. As both the pupils and soldiers cannot be accommodated together it has been necessary to close the soldiers' school until next summer.

The board of education of New York has under its contract with the War Department housed, fed and instructed the drafted men. The school building has really been a government reservation for the summer with sentries on duty. The classrooms and gymnasium have been used for dormitories. During the closing the principal arranged a vaudeville performance and dance for the men.

Almost all the men secured certificates stating they were fitted for special war service. Many of the men had had experience in the trades and selected work for which they believed themselves fitted. Others selected trades other than those in which they had experience, desiring to secure a more general preparation for war service.

Probably the most popular course was auto repairing—more than eighty men taking it. The auto shop which was built by the boys of the regular school a few years ago was used. Old automobiles have been taken apart, examined and set up again. Another popular course has been electric wiring, the branch having to do with radio work. Other courses offered included machine shop practice, forge work, woodworking, sheet metal and pipe fitting.

Preparations for establishing student army training corps units are being made by the colleges of New York State in accordance with the War Department's plan. A letter has been addressed to the young men of the state by the Commissioner of Education. He states among other things that the War Department has asked that 13,866 young men from the state enter college this fall and enlist in the S. A. T. C. units in order that its need of highly trained men be met. The young men over 17 will enlist, so far as they are physically fit and willing so to do, in the students' army course in the college of their choice. They will become members of the army for the duration of the war. To the men enlisted the War Department will give equipment and military instruction with travelling expenses and private's pay.

A number of colleges, including Rutgers College and Girard, have opened cooperative industrial courses. Girard College, of Philadelphia, has selected groups of fourteen students each from among its student body and other technical schools and has arranged a course of study so that each group will alternate school and shop instruction in two-week shifts. While working in the plants the students work eight hours a day and are paid 33 cents an hour. A large touring car provided by a company transports the boys each day from the college to the shipbuilding plant at Chester, Pa. The time used in making the trip from Philadelphia to Chester, about ninety minutes each way, is partly taken up in discussing the daily reports, problems of shipbuilding, current events and other matters of interest. The aim of the course is to provide leader-ship in the shipbuilding trades thru actual contact with both theory and practice.

The Recruiting Service of the United States Shipping Board has organized a number of marine engineering schools providing free tuition in both day and evening courses in marine engineering. The most recent one was opened at Newark, N. J. The proposed course of study will include instruction in practical mathematics, operation of steam boilers and engines, electrical

(*Continued on p. VI.*)

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machinery, refrigerating machinery and internal combustion engines. The course will cover four weeks for the day class and eight weeks for the night class, and will qualify students for Third Assistant Engineers.

The State College of Pennsylvania has had over 1,400 enlisted men taking war courses. The men are housed in the college dormitories. They are taught the mechanics of motor trucks and airplanes by members of the faculty. In addition, a military training camp with 100 volunteers has been in operation on the campus.

—W. H. DOOLEY.

FROM THE NORTHWEST

AFTER having had the matter under consideration for three years, the Seattle Board of Education has created a department of vocational guidance and has elected Charles Kirkpatrick, formerly vice-principal of the Broadway high school, as the first director of the department. Mr. Kirkpatrick is well qualified for the position, having made an intensive study of vocational guidance in connection with his duties in the high school. He also devoted several summers to this study at the University of Chicago.

Mr. Kirkpatrick will co-operate with R. W. Moore, the newly-appointed supervisor of manual arts. Mr. Moore has been acting in that capacity ever since the resignation of B. W. Johnson from the Seattle supervisorship, but it was only recently that he was elected to the position. Mr. Moore enters upon his new duties at a time when it is a nation-wide problem to obtain qualified teachers for shop work. Twenty of the Seattle corps resigned at the close of the school year last June. Mr. Moore has filled their places, but the new draft regulations will cause twelve more vacancies.

Seattle has established a Smith-Hughes class in gas engine work in addition to the machine shop class which was successfully conducted last year. Special night war-training classes have been opened for men of draft ages. Courses will include radio operating, automobile, electrical work, sheet metal, and machine shop practice. In addition, part time instruction will be given in both academic and shop courses. Pupils will attend on their employers' time for five hours each week. The high wages paid in the war industries have attracted many boys who would otherwise be in school. These part-time classes are designed especially to reach this class.

The manual arts teachers of Washington will meet in Seattle October 25 in connection with the annual meeting of the state educational association. This meeting will be addressed by Dr. Bonser. A feature of the program is an exhibit of problems that shop boys can construct for war purposes. This exhibit is not to display the work of any school or community, but rather to place before the teachers of the state an example of every problem that boys can construct for use in war relief work. —E. G. Anderson.

INSTITUTE FOR THE REEDUCATION OF DISABLED SOLDIERS

As far back as May, 1917, Jeremiah Milbank proposed to the American Red Cross the establishment of a special vocational school for cripples. This worthy citizen also proposed and offered to the society funds for its foundation. In addition to an original gift of more than $50,000, the donor gave the use of the building at No. 311 Fourth Ave., New York City, where the administrative and educational departments for the reeducation is carried on.

While the establishment of this school was inspired to provide educational facilities for the economic and social rehabilitation of disabled men in general, which up to the present time has been neglected in this country, it will contribute a great deal to the reeducation of the disabled soldier and sailor. Consequently, there is no discrimination in admitting disabled persons whether they are civilians or soldiers.

Work rooms are completely equipped with machines and devices for teaching trades. One large room contains a large number of machines of various kinds which are used for the manufacture of artificial limbs of all kinds. Crippled men are taught how to make artificial limbs and other devices he may need. In another department oxy-acetylene welding is taught. While in others there is instruction in mechanical drawing, printing, motion picture projecting, the designing and making of jewelry, stenography and type-

(*Continued on p. VIII.*)

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The Finish Is Important!

SURELY this is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

JOHNSON'S WOOD DYE

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writing, dental mechanics, automobile repair work, photography, technique and commercial training for office employment.

The first consideration in training a cripple who has been a wage earner in this school is to put him back as soon as possible upon a pay roll. With this aim in view the range of possible occupations is limited by the physical disabilities, and the ideal is to train him to become a proficient worker in an industrial process in which his particular handicap will count the least. In doing this, considerable reliance is placed upon the marvellous processes of nature whereby remaining powers are sharpened and developed to compensate for the physical loss sustained.

Though innumerable disabled men will be prevented from returning to the occupations in which they previously were employed, it has been the experience of England, France, Italy and Belgium that even the most seriously crippled can be taught to do other really worth-while things at which they can earn the standard wage. It is hoped that all manual and vocational teachers will keep in touch with the organization of schools experimenting along this line and study the methods of teaching.

SECOND ANNUAL MEETING OF THE VOCATIONAL AND ARTS ASSOCIATION OF NEW JERSEY

The second annual meeting of the Vocational and Arts Association of New Jersey was held in the State Normal School, Trenton, N. J., on May 24th and 25th. About three hundred members from all parts of the State were in attendance at the meetings. The interest and enthusiasm shown by the members indicate that the Association has become an effective agency in promoting a progressive spirit among the teachers of vocational, practical and fine arts subjects throughout the state.

F. E. Mathewson, president of the Association, gave a very interesting talk on the work of the schools throughout the country in educating and training men at government expense to fit them to serve in army positions incident to many kinds of military service, both at the front and behind the lines. Mr. Mathewson has been placed in charge of this work by the government for New York, New Jersey and Pennsylvania. He stated that 90,000 men will have received this training before November.

Dr. David Snedden, of Teachers' College, Columbia University, delivered the principal address. On the subject "In What Ways Will the Schools Probably Recognize Vocational Activities After the War," he dwelt upon the importance of adjusting the school curriculum to meet the conditions that will face the country when peace is declared. He made a forceful plea for an education that will seek more efficient means of social betterment and aim to look to the child's culture, happiness, power and character. Teachers can do an immense amount to stimulate and help this development to the benefit not only of the student, but above all, to the community.

Following the lecture the members were given an opportunity of viewing the exhibit of drawings made by French children of Paris, brought to this country by Dr. John H. Finley, Commissioner of Education of New York.

The members met the following morning and after a short business meeting Mrs. Bertha Holly, of New York, addressed the Association on the topic, "Principles of Art in Dress." Mrs. Holly studied art in Paris for ten years and she is endeavoring to educate the American people to dress artistically. She stated that decorative art is the highest form of art, and that art expression in the wearing apparel of the people is more worth while than painting on canvas. Art in dress does not follow the whims of fashion, as simplicity and economy are its most essential characteristics. She illustrated her discussion by a number of dresses exhibited thru the aid of an assistant. A war gown formed an interesting feature of her exhibit.

At the conclusion of the address twelve group meetings were held in different rooms of the Normal School. A great deal of good has been accomplished by the exchange of ideas and discussion of problems at these departmental meetings.

The convention ended in the afternoon with a luncheon at the Hotel Sterling during which Dr. David B. Corson, acting city superintendent of schools of Newark, delivered an address on "The American Outlook." Dr. Corson said that Amer-

(*Continued on p. X.*)

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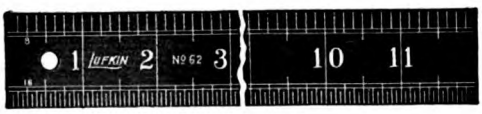

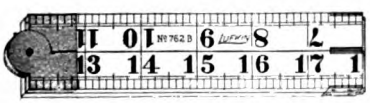

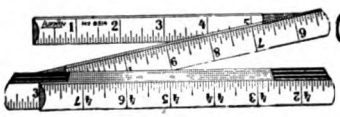

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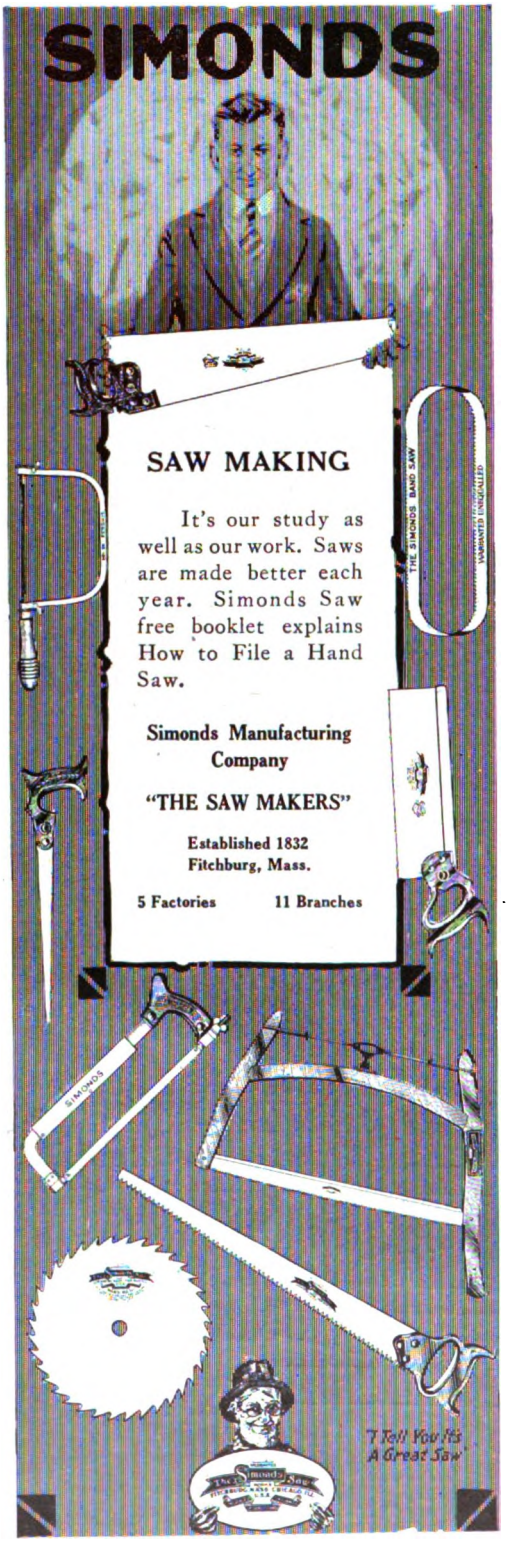
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5 Factories
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I Tell You It's A Great Saw

FIELD NOTES

(*Continued from p. VIII.*)

ica had expressed her spirit in the past thru invention, scientific achievement, systems of transportation and particularly in the American newspaper. The real spirit of America in the future, he said, will be expressed thru the achievements of its schools. He pleaded for the development of purpose and sincerity in the character of the children of this country.

At the business meeting, reports of committees were given and the following officers were elected for the ensuing year: President, Hugo B. Froehlich, Newark; Vice-President, William R. Ward, Trenton; Secretary, James E. Gaffney, Atlantic City; Treasurer, Clifford E. Parsil, New Brunswick.

—JAMES E. GAFFNEY,
Secretary.

CHICAGO LATIN SCHOOL BAZAAR

After the Easter Vacation it was decided to hold a bazaar the last of May at which work of the children in the shop and art department would be sold. Consent was obtained from all the parents to pay for materials used so that all money taken in would go for a $2,000 ambulance, which was our goal.

There being but six weeks, work was begun in earnest. All grades from the kindergarten thru the eighth got busy and the shop soon became like a bee-hive, children working from 8:30 A. M. until 5 P. M.

A barometer running from $0 to $2,000 was placed in the front hall to record the growing fund, as the children could not wait for the bazaar but insisted on carrying out various entertainments both at school and home such as "A Bird Lecture," "A Flower Lecture," "Candy Sale," "A Butterfly Lecture," "A Charlie Chaplin Movie Show," "Ice Cream Sale," "Animal Lecture," etc. Enthusiasm ran high and children earned money by carrying ashes, making cushions, selling cakes, selling Liberty Bonds, bazaars at home, selling flowers, etc., so that by the day before our bazaar the barometer stood at $1,200.

The big "Gym" was decorated in "Food Conservation Crepe" and the results of six weeks' work attractively arranged on tables around the wall. Before nine o'clock of the "big day" parents and friends began to swarm in and buy lavishly. Clerks and cashiers were kept busy all

(*Continued on p. XI.*)

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FIELD NOTES

(*Continued from p. X.*)

day and part of the next day before all was sold. The barometer was raised every hour as the sales were added, and by three o'clock of the first day our goal of $2,000 was reached.

When everything was finally balanced, we had $2,400 with which a General Motors Ambulance was bought thru our local Chicago Chapter of the Red Cross and sent to France on its mission of mercy.

This war work will continue during the coming year and we feel the children are receiving as much benefit as the soldiers by their efforts and will be better and more loyal citizens by doing "their bit" in this way.

—Lester C. Smith,
Head Manual Arts Dept.,
Chicago Latin School.
Chicago, Illinois.

PUPILS SELL MANY POSTERS

The Brooklyn Committee for the Prevention of Tuberculosis is preparing to send out a loan collection of posters made last year by pupils in the art department of the Brooklyn and Queens high schools. Toward the end of the school year each school held a competition, and a number of prize posters have since been purchased by the Committee on Tuberculosis for their travelling exhibition.

Dr. James P. Haney, director of art in the high schools, emphasizing the practical nature of the competition, said "It is the desire of the high school art department to do work which is thoroly practical. The recent poster competition is an illustration in point. Every school in Brooklyn and Queens participated in this contest, as well as the schools in Manhattan and the Bronx. The standard of work was excellent and did credit to the pupils and teachers who aided in the contest. It was all voluntary work, and the fact that thirty of the posters were purchased for Brooklyn alone shows in what degree the pupils themselves succeeded."

Nothing is being left undone to insure complete rehabilitation of our disabled soldiers and sailors. Many of these men are talented and well educated, and to utilize their abilities during con-

(*Continued on p. XIV.*)

Starrett Tools
The Precision Machinist Knows Good Tools
The precision workman is the one who insists on Starrett Tools for he knows that no job can be right unless his fine tools are of unquestioned accuracy.
Starrett Tools have been the choice of the skillful workman for many a long year.
Our Catalog No. 21 EF showing 2100 fine precision instruments will be sent on request.
THE
L. S. Starrett Co.
The World's Greatest Toolmakers
Athol, Mass.
New York, London, Chicago 42-797
STARRETT TOOLS

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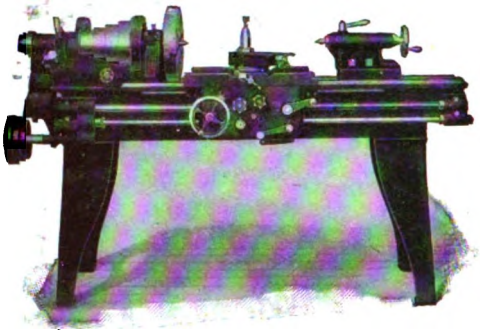
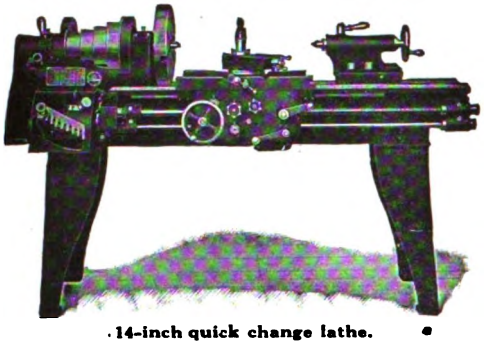
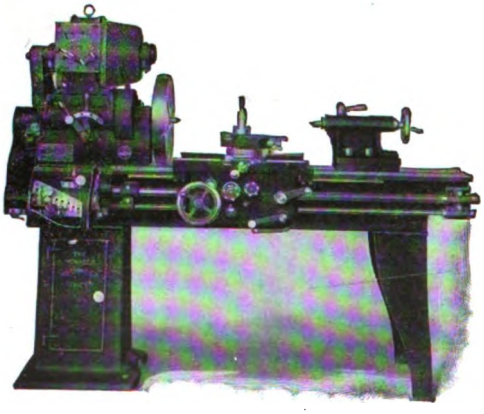


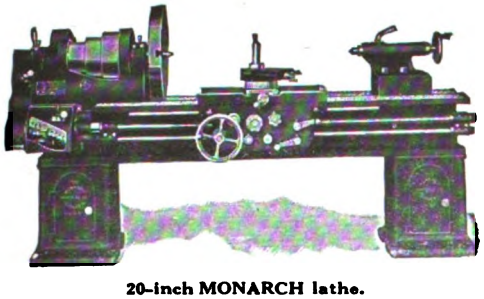
14-inch MONARCH standard lathe.



14-inch quick change lathe.



16-inch Motor driven geared head.



20-inch MONARCH lathe.

MONARCH LATHES

from 14 to 20 inch swing

offers the ideal lathe for the manual training school. They are furnished in any style and with practically all attachments desired.

MONARCH lathes are low in price yet are as accurate as the highest priced lathes. By installing **MONARCH** lathes you can in many instances put in **two MONARCH** lathes for the same cost as **one** of the high priced lathes.

MONARCH lathes are in use in many factories and tool rooms with lathes costing almost twice as much doing just as much and as accurate work.

It is not necessary to pay a high price to secure a good engine lathe.

Let us send you our catalog and list of manual training schools using the Low Priced **MONARCH** lathes.

THE MONARCH MACHINE TOOL CO.

SIDNEY, OHIO

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VOLUME XX No. 2

MANUAL TRAINING MAGAZINE

OCTOBER, 1918

MANUAL TRAINING AND VOCATIONAL EDUCATION

ARTHUR B. MAYS,
Sam Houston Normal Institute

MUCH is being said of late about industrial education that is "practical," that is on a "productive basis," that is "definite," etc., and such expressions are frequently used in such way as to strongly imply that whatever of industrial work the schools are now doing is not practical, nor is it on a proper basis, and it is rather a waste of time and money. In fact, on more than one occasion recently, well known men in the field of industrial education have been quoted as saying that manual training is a failure.

This attitude toward manual training has been given considerable emphasis by the efforts being made to organize the vocational work provided for in the Smith-Hughes act, and the fact that the framers of that act went to such pains to make it impossible for any form of manual training work to benefit by its provisions has lent authority to the loudly proclaimed objections to manual training. However, we may be sure that when the new Government-subsidized vocational schools have been in operation long enough to find their proper place in our national educational scheme, and some of the leaders in the field of vocational education have recovered somewhat from their excessive enthusiasm over the great advance step that has certainly been made, a saner view of the whole field of education will be taken.

But, in the meantime, much harm is being done to manual training in the schools, and many splendid teachers are becoming discouraged and are wondering if after all they are not engaged in a form of educational work that is all wrong. The chief harm comes, however, from the fact that large numbers of school authorities who have not examined closely into the question, are taking up the catch words of the extremists and are making it most difficult for the teachers of manual training to bridge over this period of unusual stress and rapid development.

There are a few simple facts which need to be stated, namely: first, that there is no inherent cause for antagonism between manual training as we have it in our best schools and the new development in vocational education; second, almost without exception the men who have taken the leadership in the movement for definite vocational training have come from the ranks of manual training teachers; third, manual training has long since proved its value and found its place in our great scheme of public education; fourth, without the splendid results accomplished by manual training in the public schools, the present progress in vocational education would have been greatly delayed, if not made impossible; and fifth, the best efforts thus far made in the field of definite vocational education have been successful, largely, to the extent to which they have used the methods of the best manual training.

At least two of these propositions need to be emphasized at this time: first, that there need be no antagonism between man-

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ual training and definite vocational education. Both of these phases of industrial education have a definite and most important work to accomplish. Manual training, while it is distinctively industrial in character and points toward a specific group of vocations, is yet a definite, and in our economic scheme, a most valuable department of general education. Vocational education deals with boys who have reached the point where their general education has ceased, and they are about to enter a vocation. Manual training deals with boys who are still in the period of general training and are not yet preparing for a definite occupation. One deals with a group of specialists who have made their choice of life work; the other with boys who have not yet been forced to make their great decision. Vocational education aims to develop skilled workers in definitely designated occupations. Manual training aims to develop thoughtful, efficient boys who may, with intelligence choose the type of vocational training they need, and with greater economy of time, and efficiency of effort become masters of their vocations. One gives emphasis to the needs of the vocation and industry; the other emphasizes the needs of the boy and society. One belongs to the early working period of life; the other to the school-boy period.

There is, therefore, no inherent cause for conflict, as they are operative at different periods of a boy's development, and both have an invaluable work to perform in the training of the same boy for the greatest service to society. It is true that manual training does not always function in the life of a boy as it is designed to function, but it is safe to assume that it functions efficiently at least as often as most of the departments of school work that have been longer recognized as essential in the preparation of boys for their work in later life; and no thoughtful student of education any longer will deny that manual training is one of the most stimulating and vitalizing influences that has ever been introduced into the schools. Let no teacher of manual training think that he is engaged in a work of minor importance, or that manual training is in any sense a failure, for it has without doubt contributed more in the last twenty-five years to the vitalizing and popularizing of the public schools than any other one thing in the schools, and it has had a tremendous influence in the marvelous industrial progress made in this country within recent years. Furthermore, it is the very foundation upon which the present rapidly expanding structure of vocational education is based.

Again, the assumption that because manual training is not put on a "useful or productive basis," as the expression is interpreted by the Federal Board for Vocational Education, it is therefore useless and nonproductive of anything worth while, should not be blindly accepted. It may be of interest to note that the very reason that industry is asking for specific vocational education by public agencies, is because it has found that vocational education carried on in the factory on a "useful or productive basis" has failed to train the type of worker needed, and it is somewhat illogical, on the face of it, to condemn the method of the school and insist on the method that has signally failed in industry. No progressive teacher of manual training will claim that there is no need for improvement in his method of instruction; nor will he deny that there is much of value that may be adapted from the commercial shop and the factory; but he is unwilling to discard all that he has found to be sound and effective in school instruction and take over bodily the methods of commercial production. And it may be said also that the oft-repeated statement that manual training is completely dominated by the traditional ped-

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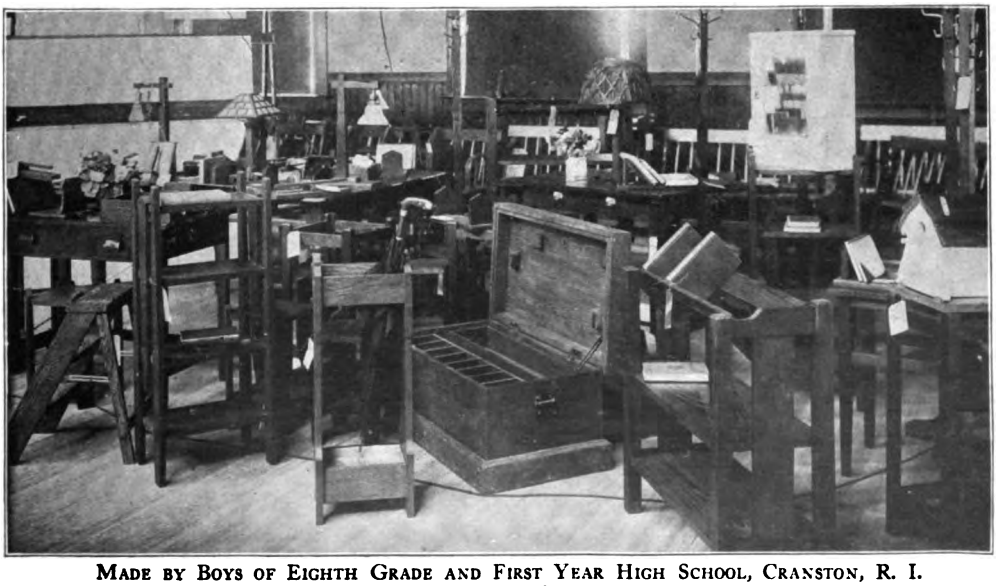
agog is not true; rather is it true that manual training has brought to the schools new methods, new organization, and a new point of view. Dr. McMurray, of Peabody College for Teachers, in a recent address, stated: "In the manual arts you have well defined units of instruction that other subjects have never developed[1]." And this suggests but one of the many contributions that manual training has made to modern educational thought.

Surely, thirty-five years of experience and growth in a department of education that has been constantly under the necessity to defend both method and content from pedagogs on the one hand, and industry on the other, and both at the same time, have developed some principles that may be considered fundamental and as having some authoritative force in determining how to train boys in the mechanic arts. As was pointed out in a recent editorial in this magazine,[2] the experience of the more important corporation schools has demonstrated the necessity of practicing sound, scientific pedagogic methods of instruction in preparing boys for specific work in industry. Certainly, teachers of manual training must keep in close touch with industry, and there is much to be learned from the factory, and there is need for a constant modifying and improvement of organization, content, and method, in order that the school work may keep in close touch with the marvelous economic and social changes taking place to-day; but we must, as trained teachers, bring to bear our experience as teachers of boys, and our professional knowledge as students of the laws of mental development on every thing that we would borrow from industry to use in the school.

Let us then not be stampeded by the cry that all we have done is a failure and is useless, but let us study constantly to keep our work up to the great demands made on us by the present crisis, with the consciousness that we have a most necessary part to perform in the great scheme of American life.

[1]Address delivered before a conference of teachers engaged in the training of teachers of manual training and vocational education, at Nashville, Tennessee, December, 1916.

[2]March, 1918.



MADE BY BOYS OF EIGHTH GRADE AND FIRST YEAR HIGH SCHOOL, CRANSTON, R. I.
H. F. ANGLIM, SUPERVISOR.

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VISUAL INSTRUCTION IN THE UNITED STATES

RALPH F. WINDOES,
Instructor in Manual Training, Davenport, Iowa

THERE has been a tendency, especially marked during recent years, to promote the use of the various means of instructing thru the sense of sight —the visual method. (This name is a misnomer in most cases, as the sense of hearing is brought into play in a lantern slide or chart lecture, the senses of hearing and touch with educational exhibits, while the one strictly visual method is the motion picture exhibition.) All of these means are of especial interest to teachers of the manual, industrial, agricultural, and household arts, and it is the object of this paper to inform teachers as to where the various materials for this work can be obtained, rather than expound the virtues of the means themselves.

In some states, the State Department of Education will furnish the schools of the state with lantern slides. In others, this work is carried on by some other state department, while in the majority of states supplying this service, the work is under the extension department of some college or university.

STATE DEPARTMENTS

As far as the author has been able to ascertain, the following states are doing nothing, or very little, toward supplying the schools of their state with films, slides, or exhibits: Arizona, Arkansas, Colorado, Delaware, Florida, Idaho, Kentucky, Maryland, Michigan, Mississippi, Montana, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Virginia, Washington, West Virginia, Wyoming.

In a number of the above the work is contemplated, or some schools in the states have sets of slides of their own, tho no organized effort is made to loan this material to other schools possessing none.

The State Department of Education of New York, Albany, N. Y., has, perhaps, gone into the work more extensively than any other state department in the country. They have a well equipped department of visual instruction, and make loans to schools within the State of New York, but not outside. Their lists of slides and photograps comprise thousands of titles, covering all branches of education. Those of particular interest to teachers of the industrial arts are as follows:

Iron and Steel Manufacture. 84 titles.
Coal Mining. 42 titles.
Clay and Clay Products. 54 titles.
Salt. 18 titles.
Natural and Artificial Ice. 19 titles.
Forestry and Lumbering. 131 titles.
Naval Stores. 14 titles.
Maple Sugar. 7 titles.
Whales and Whale Fishery. 48 titles.
Perspective Drawing. 83 titles.
Schoolroom Decoration. 70 titles.

Each set is accompanied by a lecture outline. In addition to the slides and photographs, this department has a loan collection of some 550 wall pictures which are available for school use.

The State Department of New York does not furnish films. Alfred W. Abrams, chief of the Visual Instruction Division, states, "We have given much attention to what is being done in this field and we are not yet convinced that the field for motion pictures of an educational character is very extensive, particularly so far as school instruction is concerned. The results ob-

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tained seem altogether out of proportion to the expense. Furthermore, we conclude that the basis of real visual instruction is definite observation accompanied by a discussion, and that therefore properly selected slides serve a larger purpose. It is quite necessary, however, that slides should be authentic and that the teaching value of each picture should be well in mind."

Next to New York, the State Department of Education of Vermont, Montpelier, Vt., has the largest collection of loan slides. These are distributed to the schools of the state together with lanterns, thru the sixty-six district superintendents, but are not available to schools outside of Vermont. In their collection will be found sets on the following subjects on industrial arts:

Marble Quarrying. 32 titles.
Manufacture of Cotton. 8 titles.
Pipe Organ Manufacture. 12 titles.
Vermont Agriculture. 109 titles.
Mining Iron and Steel. 29 titles.
Mining Coal. 7 titles.
Mining Copper. 7 titles.
Lime Industry. 8 titles.
Slate Industry. 5 titles.
Granite Industry. 8 titles.
Lumber. 49 titles.
Fibre Leather. 11 titles.
Silk Industry. 8 titles.
Paper Making. 21 titles.
And a large number of related subjects.

In Louisiana, the State Department at Baton Rouge has a number of slides on public school development, but very few in their list touch subjects of a vocational nature, with the exception of agriculture.

Connecticut State Department, at Hartford, has a number of lantern slide lecture sets which are loaned only to schools in their state. Of interest to manual training teachers are four sets on birds and bird protection.

In Alabama the State Department, located at Montgomery, has a few sets of slides which are loaned to schools, while agricultural slides are sent out by the agricultural department at Auburn.

Nebraska at present is doing very little with this line, but will soon have a number of sets of lantern slides on various subjects which will be distributed to schools. The State Department of Education has its headquarters at Lincoln.

In New Hampshire, a few sets of lantern slides are available for school use. These are obtained from the State Department at Concord.

GOVERNMENT MATERIAL

The Department of the Interior, thru the Bureau of Education, has lantern slides for school use on the following subjects:

Domestic Science.
Urban School Gardening.
Kindergartens and Kindergarten Work.
The Teaching of English to Native Illiterates and to Immigrants.
Rural School Buildings and Grounds.
Special Activities in the Rural Schools. (Industrial Work, etc.)

These are loaned to anyone upon application. Each set consists of 52 uncolored slides, with lecture.

The Forest Service of the U. S. Department of Agriculture has sets of slides on the following subjects, some of which are beautifully colored:

Conservation of the Forest.
Forestry in the United States.
The Work of the Forest Service.
The Farm Wood-lot.
Street Trees.
Nature Study and Forestry.
Botany and Forestry.
Manual Training and Forestry.
Geography and Forestry.
Agriculture and Forestry.

These slides are also loaned to schools upon application, each one being accompanied by a lecture outline.

In addition to slides, the Forest Service has prepared other exhibits of visual character. They have a traveling exhibit of

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commercially important woods of the United States with data concerning their habitat, uses, characteristics, etc. Application for this exhibit should be made in advance, as it will be routed from some other city. In like manner, and routed in the same way, they have traveling photograph exhibits. Each contains 44 large mounted photographs of the forests of the United States, their use and preservation. This material is extremely practical and of great interest to students.

Other government departments loaning such material are the States Relations Service and the Office of Public Roads and Rural Engineering, of the Department of Agriculture. The National Park Service of the Department of the Interior loans slides and films on the national parks of the United States.

STATE DEPARTMENTS OUTSIDE OF EDUCATION

In Maine, the State Board of Health, at Augusta, has something over 2,000 slides covering twenty topics or more, each accompanied by a lecture. They are loaned to schools of the state, but are not sent outside.

The Department of Conservation and Development of New Jersey, thru the State Museum, has a collection of some 4,000 loan slides, many of which are on subjects of an industrial nature. This service has been in effect only a year, yet its far-reaching benefits have been made so apparent that it is being constantly enlarged. Subjects of an industrial nature are listed as follows:

Architecture, Engineering, Forestry, Agriculture, Chemical Industries, Clay Products, Fishing Industries, Manufacturing Industries, Mineral Industries.

These slides are available to any school in New Jersey, but are not loaned or rented outside.

COLLEGES AND UNIVERSITIES

To the wealth of material furnished by the government and state departments must be added that great service being performed by our colleges and universities in supplying schools with illustrative materials.

The University of Wisconsin, thru its Extension Division, furnishes public schools of the state, and will rent for a very reasonable charge outside of the state, a very complete list of motion picture films and lantern slide sets. They are constantly adding to the collection, which now comprises hundreds of titles, many of which are in duplicate. It would be useless to list the subjects covered, as their material is rich with subjects covering every phase of the industrial arts field.

The University of Minnesota, thru their extension service, are loaning schools sets of lantern slides on various educational topics. They have no films, and do not allow their material to go out of the state. This year they have had 23 sets in circulation, each of which is accompanied by a lecture or reading.

The Extension Division of the Iowa State College, at Ames, has a rather extensive list of picture films in circulation. Almost nothing is done with lantern slides, while their list of films is constantly increasing. This fall there will be prepared a number of sets of slides which will be circulated in the same way. They will loan these sets outside of Iowa, but a small rental charge is made for films sent outside the state.

The University of California, Berkeley, has a very unique set of over 50 traveling industrial exhibits which are forwarded from one school of the state to the next school on the circuit. Each exhibit is packed in a trunk, or trunks, and consists of two cases which are arranged by the teacher as directed. They illustrate defi-

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nite processes of manufacture, showing samples during various stages and photographs of the processes. The University sends out descriptive circulars in advance of the exhibits, permitting the students and teachers to have some knowledge of the subject before the cases arrive. This service is one of the most valuable offered by any organization as it is so extremely practical.

In addition, they furnish sets of lantern slides, some of which are free, while others have a charge attached; and, in cooperation with an educational film company, they furnish films on the same basis. A unique feature of their slide service is found in their current event slides. In this they circulate a monthly lecture on current events, illustrated with about 40 lantern slides, showing chief events of the calendar month, interesting personalities of the day, etc.

The University of Kansas, Lawrence, Kans., furnishes sets of slides and educational motion picture films to schools of their state.

The University of Oklahoma, Norman, Okla., performs the same service, tho they have no films in Oklahoma.

In Georgia, the Extension Division of the Georgia State College of Agriculture, at Athens, has a number of slides and films of their own manufacture which are used by their extension workers. These are not shown in schools outside of the state.

SUMMARY

In every case where slides, films, or exhibits are loaned or rented to schools, the borrower must pay transportation charges both ways; make good any damage or breakage while the material is in his possession; and, unless otherwise arranged, must not charge admission. In only two states, Wisconsin and Iowa, is the material sent to other states, and, when this is done, a small rental fee is charged.

Altho slides and films on certain subjects can be obtained singly, the circuit plan of sending the material from one school to another, seems to be the most popular in nearly every case.

COMMERCIAL ORGANIZATIONS

In addition to the government and state illustrative material listed above, there are a number of commercial organizations furnishing free slides, charts, and films to schools. This is, in a way, advertising for them, but it is in no way objectionable, and it certainly is very instructive.

The Extension Division of the International Harvester Co., Chicago, furnishes charts, lantern slides, and a few films on agricultural subjects.

Henry Disston and Sons, Philadelphia, publish a complete list of motion picture films put out by various manufacturers for public use.

Ford Motor Co., of Detroit, have films on almost every subject relating to the industries, which can be secured for school use upon application.

The Portland Cement Association, of Chicago, have sets of slides and lectures on the manufacture and uses of cement and concrete.

Other associations furnishing films are as follows:

Russell Sage Foundation, New York City.

National Association for the Study and Prevention of Tuberculosis, New York City.

American Civic Association, Washington, D. C.

Bureau of Commercial Economics, Washington D. C.

The Mouth Hygiene Association of America, Cleveland, Ohio.

Films and slides can also be obtained from the following manufacturers or bureaus:

Community Motion Picture Bureau, Boston, Mass.

Lincoln and Parker Co., Worcester, Mass.

National Board of Censorship of Motion Pictures, New York.

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Atlas Educational Film Co., New York, Chicago, San Francisco.

Educational Films Corporation of America, New York.

Victor Animatagraph Co., Davenport, Iowa.

McIntosh Stereoptican Co., Chicago.

Keystone View Co., Meadsville, Pa.

Underwood and Underwood, New York City.

With this wealth of material available for school use; with the small expenditure necessary to install a stereoptican or motion picture projector; and with full knowledge of the great benefits to be derived from the visual method of instruction, it is great wonder that every school in the country does not use the method more.

THE MAKING OF A TELEGRAPH KEY AND SOUNDER

ARTHUR G. HAMILTON

LOWELL SCHOOL, BOSTON, MASS.

THE problem of a telegraph key and sounder shown in the following drawings was worked out under the author's direction in the Lowell School in Boston, Mass. It is not offered as a new model but is submitted as an improvement on an old idea. The following is a material list of the parts needed for each model:

1 pc. ¾"x5"x8" gum wood.
1 pc. ⅞"x1 1/16"x1⅜" gum wood.
1 pc. ⅜"x1⅞"x2⅜" brass.
1 pc. ⅜"x1⅞"—21 gage strap iron.
1 pc. ⅜"x2⅝"—21 gage strap iron.
1 pc. ⅜"x2"—21 gage strap iron.
2 pcs. ⅜"x1 9/16"—21 gage strap iron.
1 pc. ⅛"x⅜"x1⅞" soft iron.
3—⅜"—6 round head blued wood screws.
1—⅝"—6 round head blued screw.
1—¾"—6 wood screw.
1—1" drawer knob.
1 pc. ⅜" wood dowel ½" long.
1—⅜"—4 wood screw.
2—1⅛"—8 wood screws.
1—⅞"—8-32 round head machine screw.
6—¾"—8-32 round head machine screws.
1—¾"—4-32 round head machine screw.
5—8-32 hexagonal nuts.
2—4-32 hexagonal nuts.
4—¾"—5/32" round head stove bolts.
4—5/32" stove bolt nuts.
17—3/16" iron washers (or burs).
1—3/16" machine nut.
2—¼" machine nuts.
1—¾"—3/16" tire bolt.
2—1¾"—¼" tire bolts.
1 ft. No. 22 brass spring wire.
1 solid head thumb tack.
140 ft. No. 25 S.C.C. copper wire.
1 pc. ½"x3/32" round iron (driving fit).
2 pcs. ⅜"x3/32" round brass (driving fit).
2 pcs. ¼" red fibre tubing 1⅛" long.
4 pcs. 3/32" red fibre sheet ⅞" dia.
1 pc. ¼"x5/16"x4¼" soft iron.
1 pc. ¼"x5/16"x3⅜" soft iron.
3 brass upholstering tacks.

The *assembly* drawing is on sheet No. 22.

The *base-board* drawing is on sheet No. 23, and the *pivot block* drawing is on sheet No. 24. These two parts should be made first, finished all over, and the various holes laid out with the point of a scratch awl, keeping strictly to dimensions. Do not drill the holes until the polishing of these two parts has been completed. While waiting for the various coats of oil and shellac to dry the rest of the model can be made.

The *anvil* drawing is on sheet No. 23. This can be laid out on a piece of bar brass and cut out with a fine hack-saw, or made from a brass casting, snagging with a coarse file. In either case it should be finished with a smooth file and emery cloth. The three holes shown are drilled with a No. 31 twist drill and tapped with an 8-32 machine tap. Adjust in the top of the anvil a ¾"—8-32 round headed machine screw and a hexagonal nut, to be used as a lock nut. Fasten the anvil to the base-board with two similar screws, and washers. While being drilled the anvil can be held in the jaws of a wooden handscrew.

The *magnet* drawing is on sheet No. 24. The cores *A* are two tire bolts. The top

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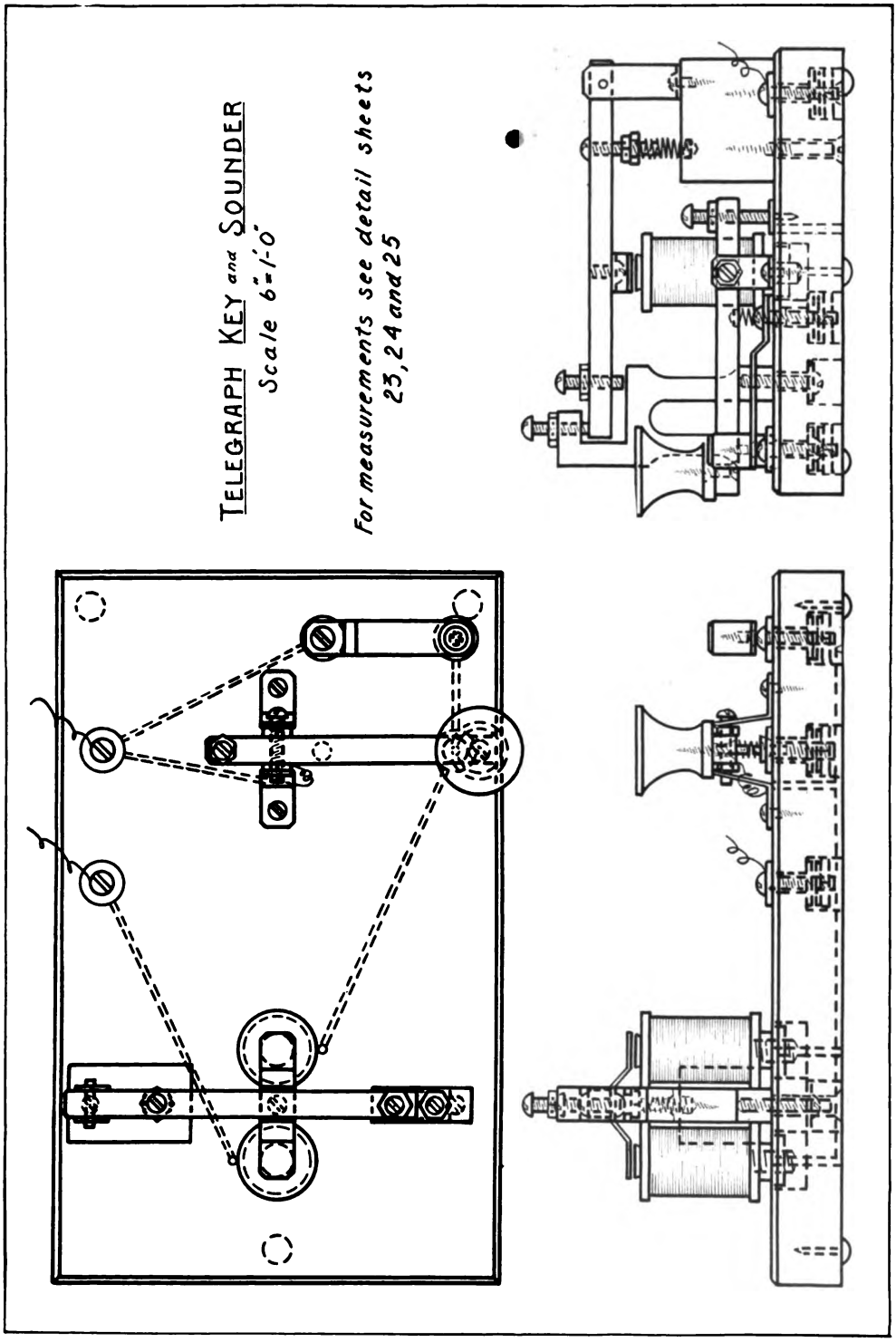

SHEET NO. 22.

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and bottom heads *B* and *D* can be cut from sheet fibre with a ¾" bung cutter, or ¾" fibre faucet washers can be used. The top heads *B* are counter-sunk so that the iron cores *A* project 1/16". The bottom heads *D* are tapped and screwed on the ends of the cores *A* hard up against the ends of the barrels *C*, which are pieces of red fibre tubing cut in the mitre-saw box to insure square ends. This makes a firm spool on which to wind the wire. Adjust the gears of a hand drill until they are tight and fasten the drill frame horizontally in a vice. Hold the threaded end of one of the magnet cores *A* in the jaws of the drill chuck. If the chuck is too small, drill and tap a ¼" hole ⅜" deep in the end of a ½" round soft steel rod and file off the other end to fit the chuck. This will take the threaded end of the tire bolt. To wind the magnet, hold the spool of wire in the left hand and turn the handle of the drill with the other hand. Allow 6" of wire to stick thru the small hole in the bottom head *D* and start close up to the right hand side and wind on a layer of wire. Care should be taken to see that each turn is as close as possible to the one preceding it, and that the wire does not slip, for any irregularity in any layer will destroy the smoothness and appearance of the outside layer. When the winding is completed hold the wire from slipping and cut 6" from spool. The last three turns are lifted and the end of the wire pulled thru underneath. Push the threaded ends of the magnet cores *A* thru the holes in the ends of the magnet yoke *E* and screw on tight the nuts *F*. Care should be taken to turn the magnet heads *D* so that the small holes in them will clear the yoke *E*. The end of the outside layer of wire of one spool must be bared and tightly twisted with the bared end of the inside layer of the other spool close up to the spool. Cut off the surplus wire. Fasten the magnet to the base-board with a ⅝"—6 round headed screw, the two nuts *F*, the corners of which must be filed off, fitting into the two ⅝" holes. The two loose ends of wire are passed down thru the two small holes, one front and one back of the magnet, and run in the grooves in the under side of the base-board to either the left binding post, or the key contact point. The connections are to be made later.

The *sounder lever* drawing is shown on sheet No. 25. The lever is made from a piece of ¼"x5/16" soft iron, filed smooth. The three tapped holes are drilled with a No. 31 twist drill, and tapped with an 8-32 machine tap at right angles to the 5/16" face. An iron rod is driven into the 3/32" hole in the end of the lever, cut off to ½" in length, and the ends filed to fit the two 3/32" holes in the top of the pivot bracket of the sounder lever shown on sheet No. 24, or the two holes may be reamed with tang of a file. This pin can be made from a wire brad. Chamfer the end of the lever a little for finish.

The *armature* drawing is shown on sheet No. 25 attached to the lever. The armature is made from a piece of ⅜" strap iron. A hole is made in the center with a 3/16" twist drill. The iron is then bent into shape and fastened to the sounder lever with a ¾"—8-32 round headed machine screw. The projecting end is cut off a short distance from the bar and then filed down smooth. Adjust two other similar screws and hexagonal nuts in the lever as shown on the drawing.

The *pivot block* drawing is on sheet No. 24. The pivot block has a hole laid out on the top face near one end. This is drilled a little larger than the outside diameter of the compression spring shown on sheet No. 25.

The *pivot bracket* for the sounder lever as shown on sheet No. 24, is attached to the pivot block. The bracket is made from a piece of ⅜" strap iron. A ⅛" hole

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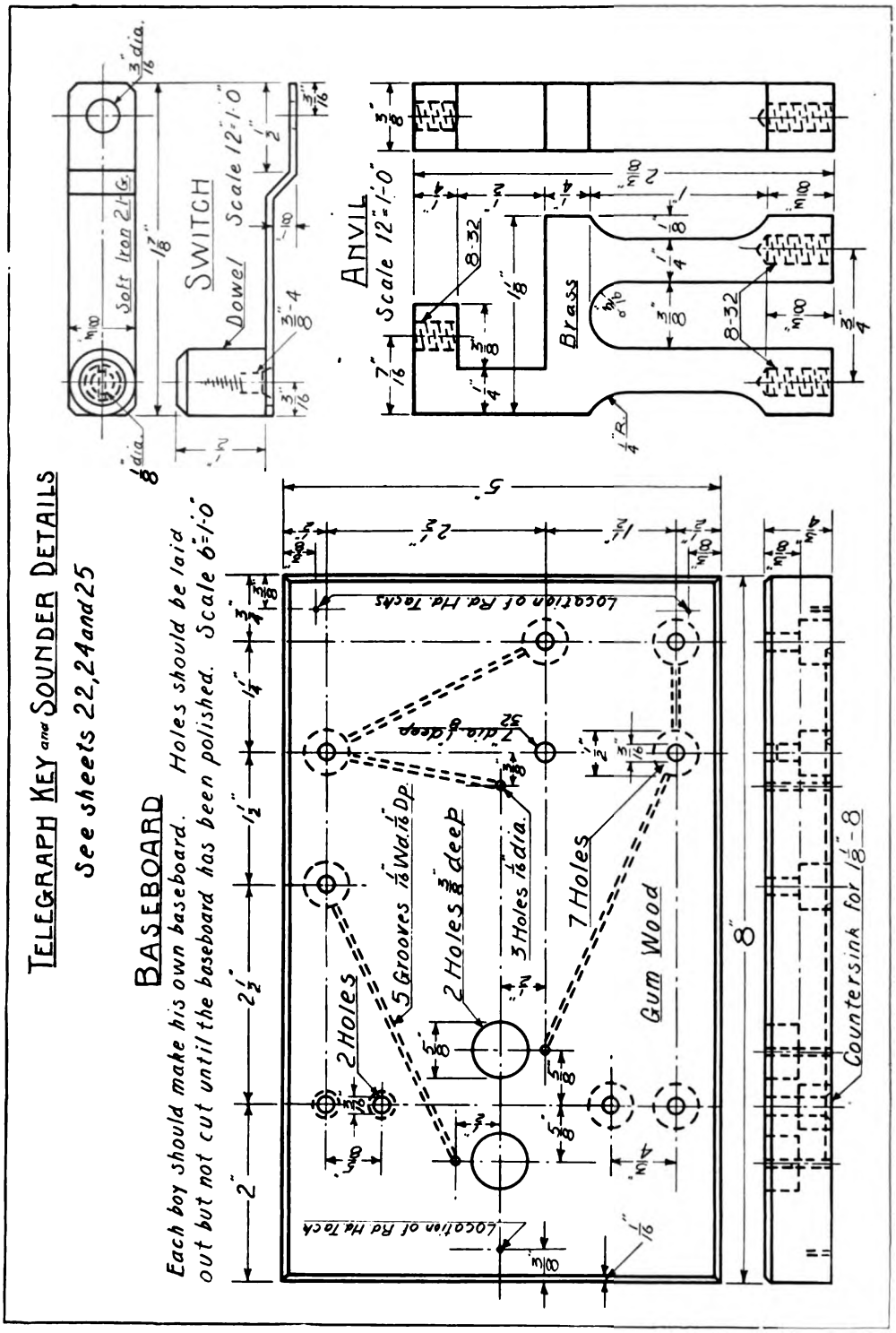

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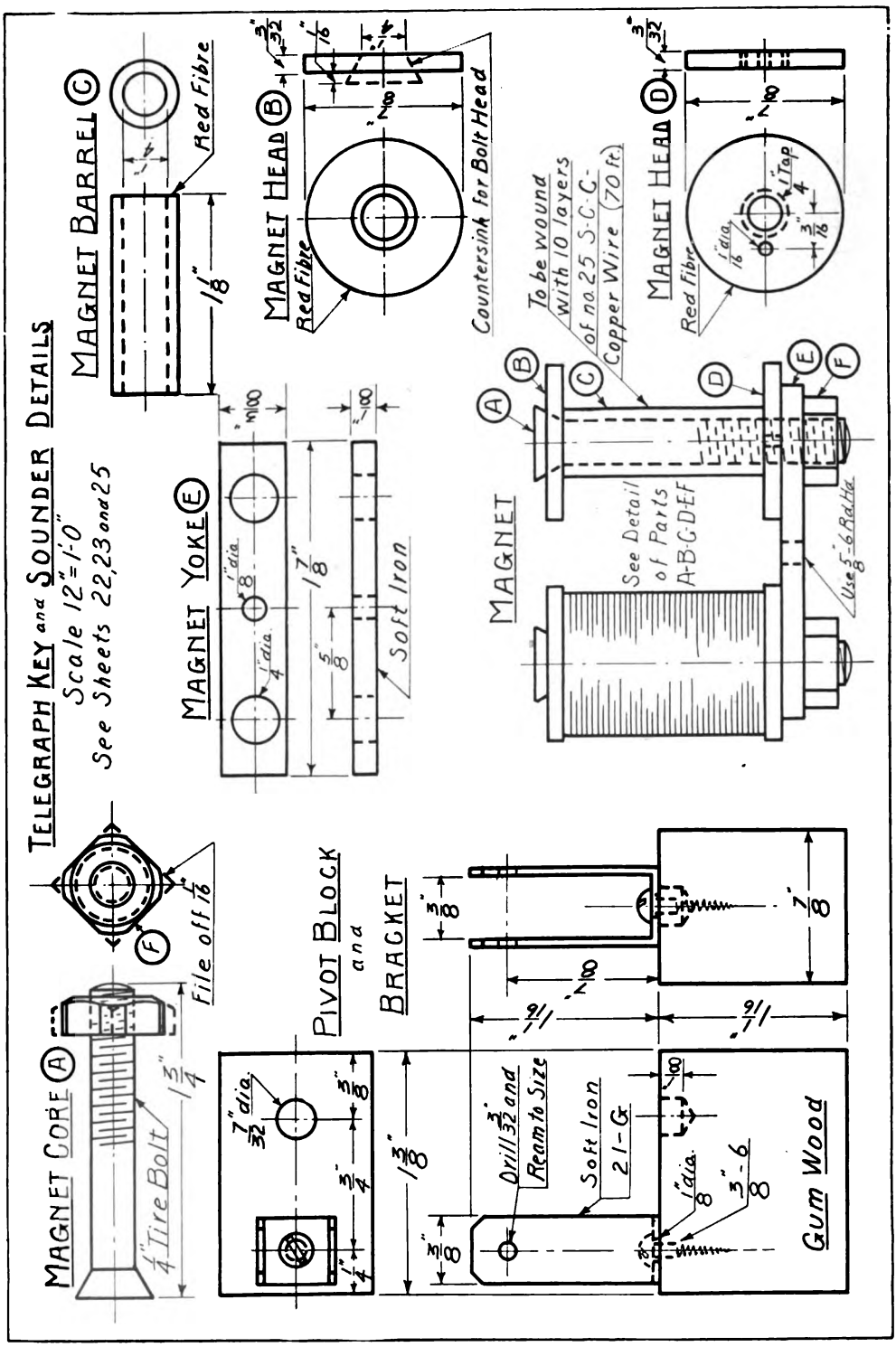

SHEET NO. 24.

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is drilled in the center and the arms are bent up into shape. The two pivot holes are laid out from the base of the bracket with a pair of dividers while holding the bracket down on a flat surface. In drilling the pivot holes a piece of hard wood 3/8" long is placed between the two sides. Locate the position of the bracket on the pivot block by measuring from the center of the compression spring socket to a perpendicular line dropped from the center of the pivot holes, and fasten to the block with a round headed screw. Mount the sounder lever in the bracket and adjust a compression spring in the socket.

The *compression spring* drawing is on sheet No. 25. The spring is made by winding a piece of spring wire around a large wire brad. It is best to separate each turn of wire as it is being wound. If this is not possible, wind the turns close together and separate after the spring is made by pulling on each end of the spring. This spring and the spring in the key lever must be 5/16" across the outside diameter.

Place the pivot block on the base-board and line up the sounder lever so that the ends of the armature come squarely over the ends of the magnet cores, and the end of the lever swings clear in the anvil. Mark thru the screw holes in the base-board and fasten in place.

The *contact point* drawing is on sheet No. 25. The contact point is made by drilling a hole in the head of a tire bolt, driving in a brass pin and filing it off to length. While being drilled the bolt is held in the jaws of a wooden handscrew.

The *key lever* drawing is on sheet No. 25. The lever is made from a piece of 1/4"x 5/16" soft iron, filed smooth. Four holes are drilled at right angles to the 5/16" face, and the other hole is drilled parallel to it. The pivot is a 4-32 round headed machine screw in a 1/8" hole with two hexagonal nuts holding it in place. It would be better if this hole were tapped with a 4-32 machine tap. When the ability warrants it, it should be tried. The adjusting screw in the end is a 7/8"—8-32 round headed machine screw. All other 8-32 screws are 3/4" long. Do not try to use stove bolts in a threaded hole. The diameter of the hole that serves as a socket for the upper end of the compression spring should be a little larger than the spring. The contact point can be made by driving into the 9/32" hole a piece of round brass rod and cutting it off to the required length with a file. The key knob can be turned from a piece of gum wood, or a 1" drawer knob can be used.

The *lever bracket* for the key is on sheet No. 25. The bracket *G* is made from a piece of 3/8" strap iron. The holes in the base are drilled, and the iron bent into shape. Then the pivot holes are laid out by scribing from the base a perpendicular height with a pair of dividers while holding the bracket down on a flat surface.

The end of a short piece of wire, similar to that used for the magnet, is bared and wound around the pivot screw of the key lever between the nut and the lever bar, and the nut is screwed on tight. (It is a good plan to make a U-shaped wrench out of a piece of 9/32" flat steel with which to tighten the nuts.) The other end of the wire is run down thru the 1/16" hole under the bracket and along the groove in the underside of the base-board to the binding post and back through the other groove to the end of the switch. Adjust a compression spring in the 7/32" hole in the lever and base-board, and fasten the lever in place with 3/8"—6 round headed screws. Care should be taken to see that the contact points are in line before the lever is permanently fastened down. Where the adjusting screw in the end of the lever strikes the base-board, a solid head thumb tack, the head of which is filed flat, is driven into the base to receive the screw.

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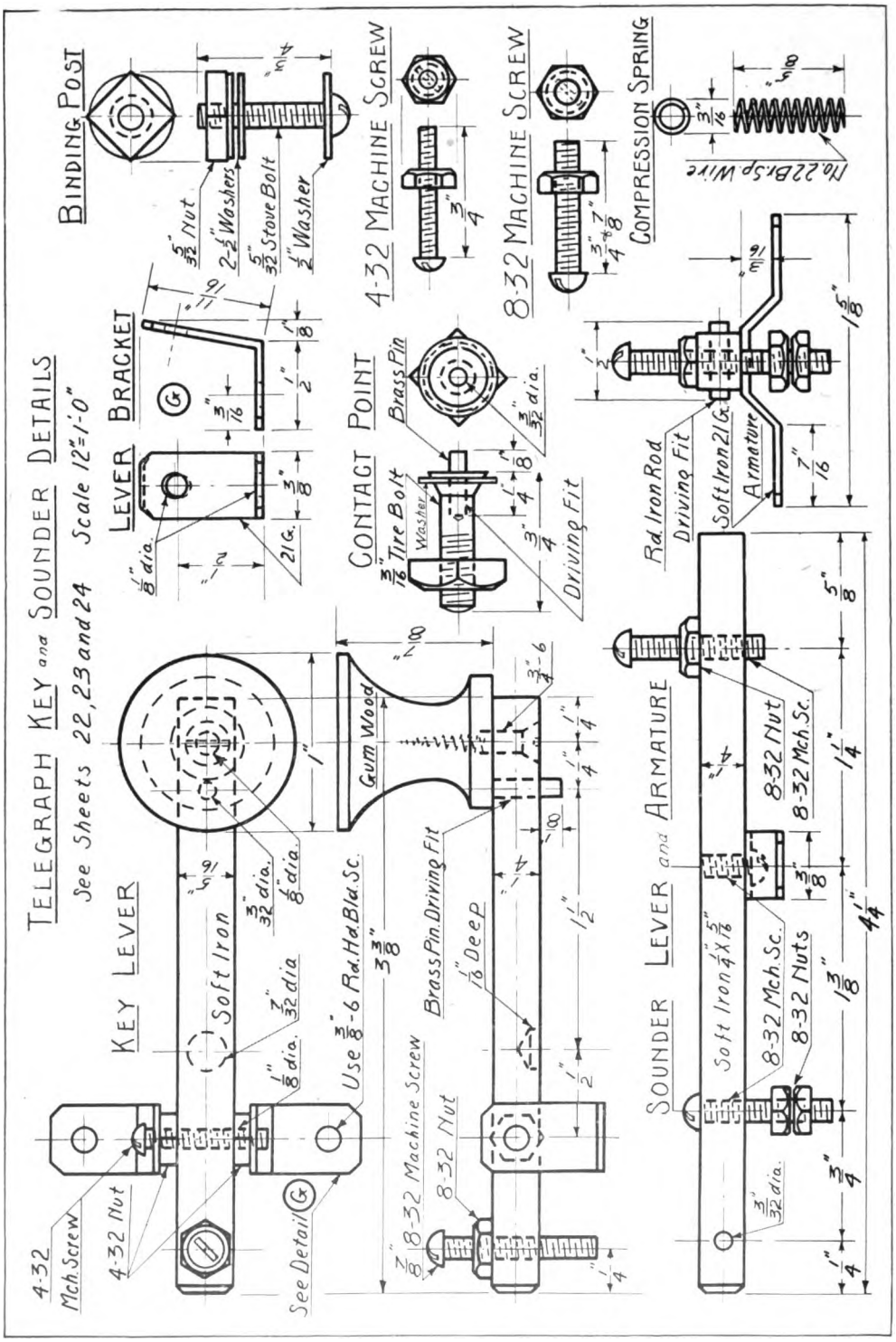

SHEET NO. 25.

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The *switch* shown on sheet No. 23 is made from a piece of strap iron, drilled and bent into shape. The knob is a piece of a wood dowel chamfered around the top. Fasten the switch to the base-board with a 5/32" round headed stove bolt with a washer between the switch and the base-board and two washers at the lower end of the bolt. In a similar manner washers are to be placed on the two binding posts and the key and switch contact points. It is between the two washers at the lower end of the bolts that the bared ends of the connecting wires are clamped. The assembly drawing, sheet No. 22, shows how the five different wires are connected.

To level the key and sounder, drive 3 brass headed upholstering tacks into the holes located in the under side of the base-board, being sure to put 2 tacks on the key end.

To adjust the key and sounder connect the two binding posts with the poles of a battery by taking a turn of No. 22 bell wire around the binding posts between the heads and the washers and tightening the nuts with a screwdriver. When the switch is closed a current of electricity will pass through the magnet, drawing down the armature. If the switch is properly wired a distinct click of the screw in the end of the lever striking the anvil will be heard. To accomplish this, adjust this screw so that it will come in contact with the anvil before the armature touches the magnet. It may be necessary to bend the armature a little. The adjusting of the screw in the top of the anvil and the adjusting of the compression spring will depend upon the strength of the current used. The lock-nuts on the compression spring must be screwed down on the spring so that the lever will rebound when the current is cut off. Adjust the key lever by means of the screw in its end so that there will be a space of about 1/16", or less, between the two contact points. The compression spring will keep the points apart. Throw open the switch and press down on the key lever bringing the two contact points together. A current of electricity will flow from the battery thru the key lever to the magnet and back to the battery, causing the magnet to pull the sounder lever down suddenly, the screw in its end striking the anvil. Release the pressure on the key lever and the compression spring under the sounder lever will force that lever up suddenly against the screw in the top of the anvil. Thus, every time, the key lever is pressed down and released two distinct clicks are made by the sounder lever upon the anvil. Adjust the instrument until this result is obtained.

To send a message, the switch is thrown open and the key lever is pressed down. The current of electricity passes from the battery to the key, thru the key to the magnet and along the wire to the closed switch of the other instrument in the line, thru this closed switch to the magnet, which pulls down the sounder lever and clicks out the message.

A closed circuit battery should be used. If an open circuit battery is used the switch must not be left closed for any length of time. Dry cells make an open circuit battery.

When one is not limited in regards to price, brass may be substituted for all metal parts except the magnet cores, yoke and armature. Brass adjusting screws with knurled heads and knurled lock nuts and regular brass binding posts may also be substituted. Also, two small platinum contact points can be supplied.

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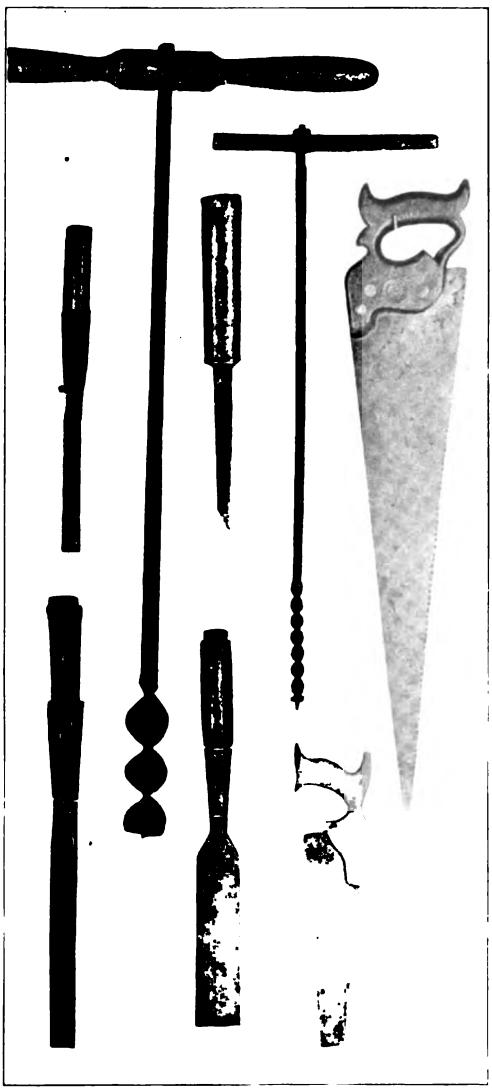
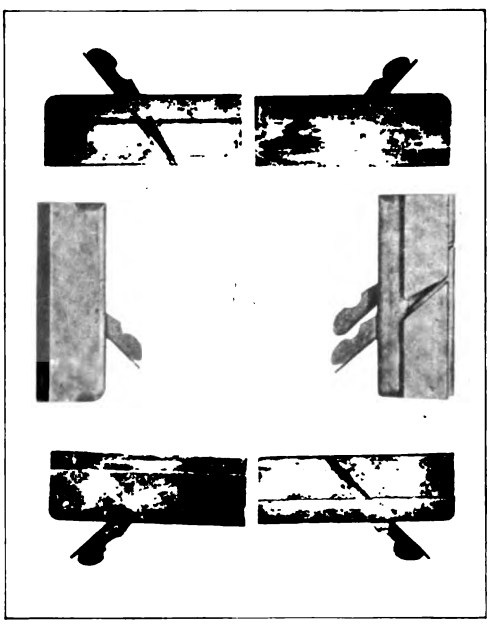
AN OLD TOOL DISPLAY USED IN TEACHING

H. C. MOHLER
Director of Manual Training, High School, Decatur, Ill.

EVERY user of tools, whether an amateur or a mechanic, is interested in the development and perfecting of modern ones. It was this interest which lead the writer to start a collection of old tools, some of which are shown in the accompaning illustrations. Most of those shown in addition to their historical interest have a personal connection which makes them doubly interesting to the owner, and have an inspiring influence which adds to the enthusiasm of his teaching.



The tools photographed are some that the writer's father had in use since about 1840, when machine work was not so universal as it is at present time. While duplicates of many of them can still be bought, others are not now on the market. The panel or raising plane is one with which even many of the older woodworkers are not familiar. It was used for making the raised panels for doors. The matching planes were used for making the tongues and grooves in flooring, and in connection with the beading plane, for the manufacture of ceiling. The scrub plane has a slightly convex bit and base, and was used for the roughing down of lumber preparatory for the use of the jack-plane. The



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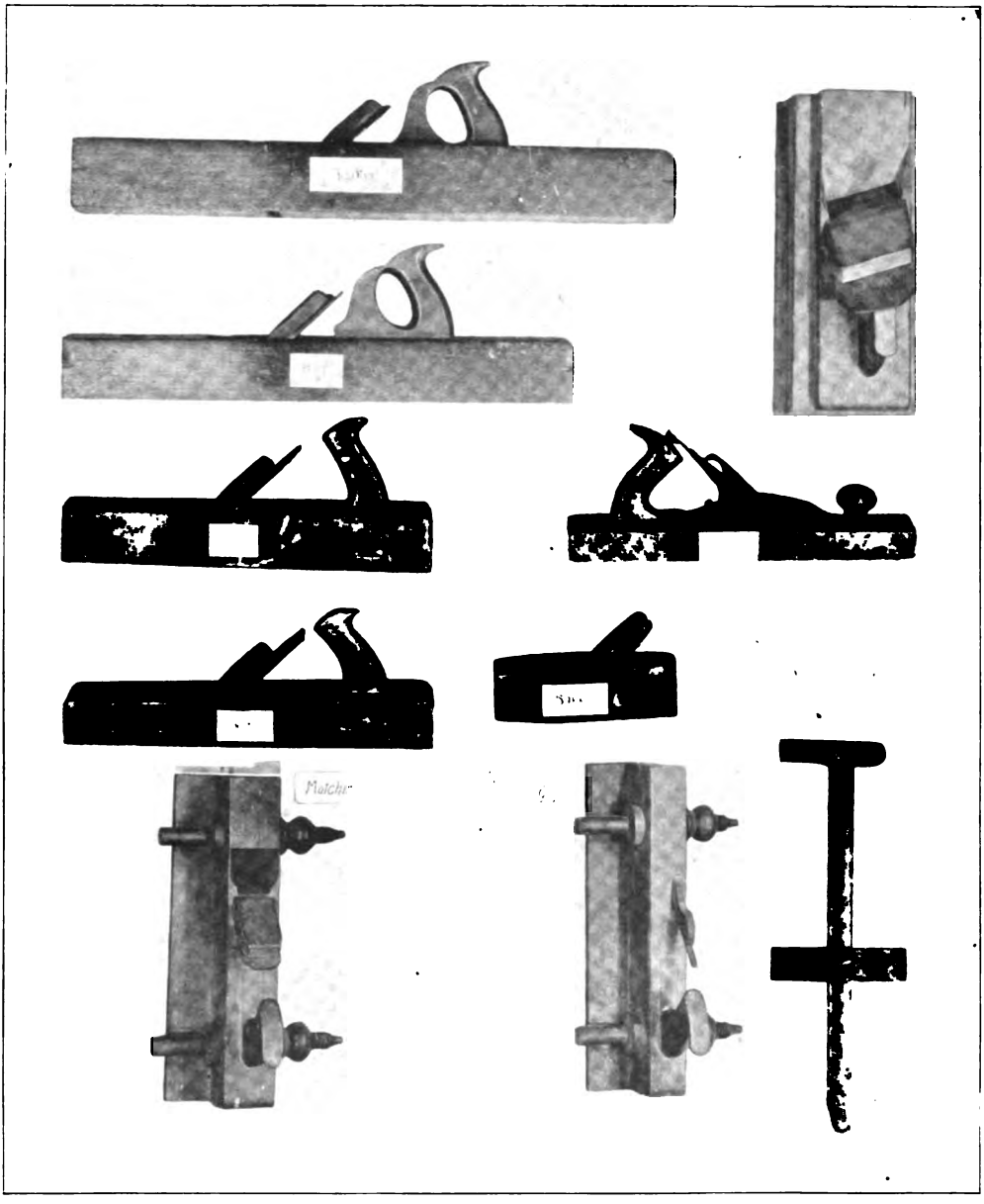

jack-plane with the iron throat, while a modern tool, shows the transition from the wooden plane to the modern iron plane.

In high schools class work the tools stimulate the interest in recitation work to a marked degree. The instructor explains their use and gives a demonstration. The pupils are afterwards required to write on subjects pertaining to the woodworking department. These papers are accepted as composition work by the English department, and are also read during the recitation period of the woodworking department.

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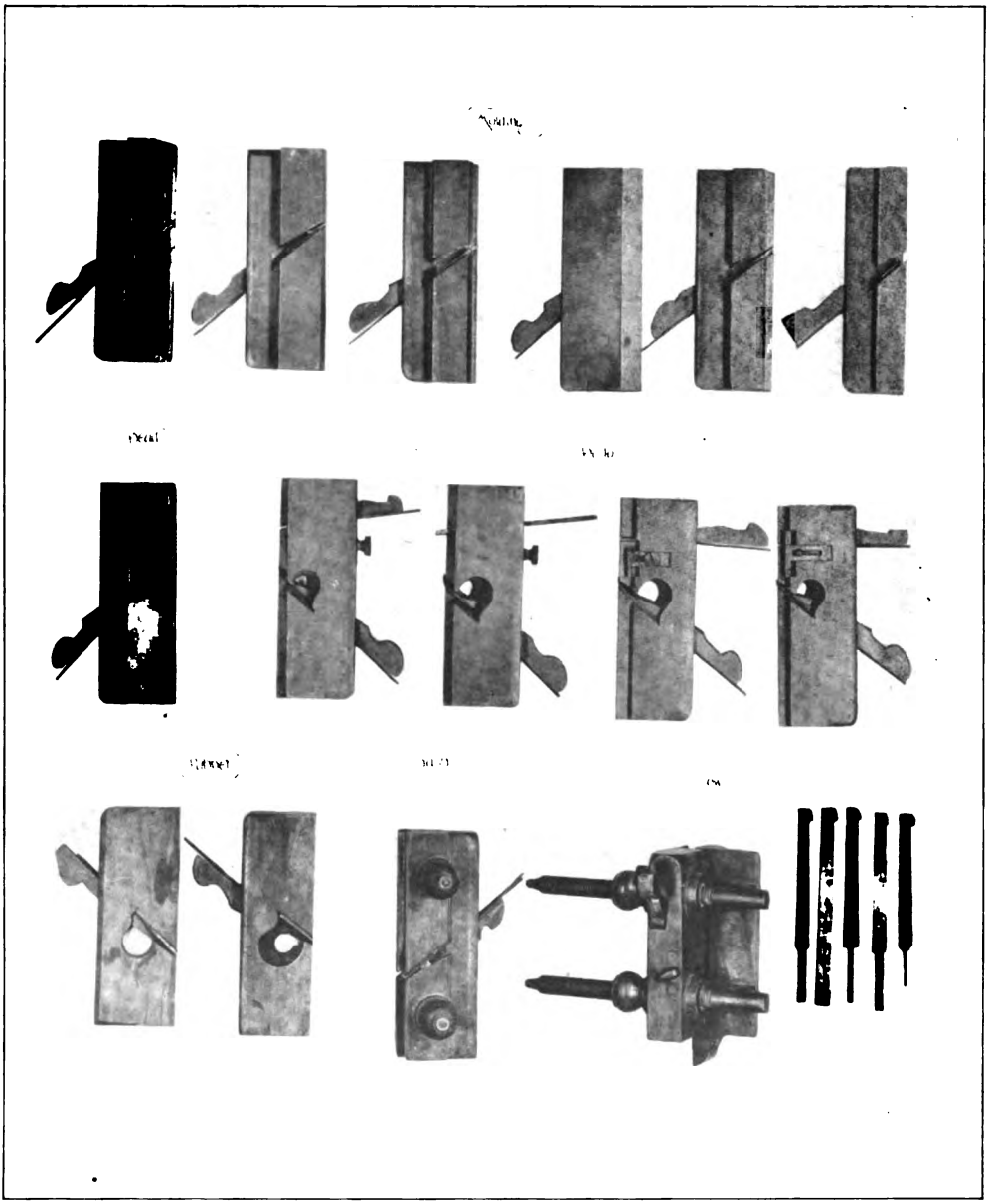

One of the subjects assigned is the saw: its history, use and manufacture, other forms of wood-cutting saws. A similar outline is given for other tools. Material for these papers is obtained from catalogs, trade papers and the public library.

In addition to the tool display, good results are obtained from the use of display boards of nails, screws, stain samples, and tools in process of construction. By skillful and frequent use of these displays pupils become as interested during the recitation as they are during the work shop periods.

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A LARGE CONTINUATION SCHOOL IN SHIPBUILDING

W. H. Dooley

THE Bureau of Vocational Activities of the Department of Education of the City of New York, in cooperation with the industrial department under Admiral G. E. Burd, is conducting one of the largest continuation schools at the New York Navy Yard. The school was established a year ago last March to supplement the practical training received by the civilian apprentices in preparing to be shipbuilders, boatbuilders, joiners, shipwrights, shipsmiths, sheetmetal workers, coppersmiths, boilermakers, sailmakers, machinists, die sinkers, electricians, moulders and plumbers.

The apprenticeship is three years in length and consists of forty hours a week shop practice under commercial and trade conditions and eight hours of related trade knowledge. At the present time there are over 450 apprentices in the different trades.

The training in shop or trade practice includes, among other things, at least one month in the tool room, handling tools under the direction of an experienced hand. The apprentice is taught shop and manufacturers' names of the tools, the difference between the condition of tools when issued and when returned. In this way he becomes familiar with the defects of tools, knows how to repair them, and when to discard them. At least one month in the stock or fitting room, under the direction of a skilled mechanic, will teach the apprentice the names of different kinds of stock and fittings. At an early period of the course the apprentice performs the menial and disagreeable tasks of the trade that require little training or skill. For at least one year he is under the direction and is working with a skilled mechanic so as to prepare him thoroughly in trade practice. After this time he works by himself under the direction of a tradesman or foremen. One month of the last year should be spent in the estimating department to show the need of economical work with regard to the cost of labor, time and material. The most difficult part of trade work, that is work done entirely from plans and involving responsibility, is done the last year. Apprentices are examined every six months on trade practice as well as on related trade knowledge.

The following questions represent types of questions asked a machinist's apprentice:

EXAMINATION QUESTIONS FOR MACHINISTS

1. Give a list of files you have used in the shop. Name at least six different kinds, stating lengths, shape and grade of coarseness.

2. Name two jobs that are generally draw filed. Name three engine parts that are usually finished in the lathe with a float file.

3. What is a drift pin? What is it used for? Explain by sketch.

4. Describe use of scraper. How should it be ground? If you needed one in a hurry how would you make it?

5. Why are black spots only scraped where a surface plate is used?

6. What is a scriber? How is it used?

7. Make a sketch of outside and inside calipers.

8. Describe a center punch. Describe a prick punch. What are they used for?

9. What is a gage? What is a template?

10. What is a hammer? How many different forms of hammers are there?

11. Name them and make a sketch of each. Which one is used most by machinists? What is its average weight?

12. What kind of hammers are used for striking on finished parts?

13. What is the simplest kind of cutting tool? What is its common name? What is its average size and length? How is it tempered?

14. What is a flat chisel used for? What is the average angle of the cutting edge for lead, babbitt, brass, cast iron, steel? Describe the method of making a file.

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15. Make a free hand sketch of a file and an enlarged section showing the details of the teeth. Which is the best method of cutting teeth in a file, straight across or on an angle? Why?

16. Explain how a file should be used.

17. Name three general classes of files. Describe each.

18. What grade of files would you use on soft metals? What other classes of work is this file used for? What file is used to remove large quantities of stock rapidly?

Related trade knowledge consists of shop English, shop mathematics, physics or shop science and shop drawing. This information is imparted to the apprentices eight hours a week—two afternoons from one to five o'clock. Departmental teaching is carried on with classes of not over fifteen in a large hall divided off into class rooms.

The subjects taught under related knowledge are very important. A skilled workman is the result of not only shop skill, but trade intelligence. He must not only know what he is to do, and how he should do it, but why he should do it. Why he is to do it involves a knowledge of the principles of science, mathematics and drawing.

The following outline and lesson sheets will show the subject-matter and methods of teaching shop mathematics, applied science and shop drawing. They may offer suggestions to teachers engaged in this line of work:

COURSE IN MATHEMATICS FOR SHIP FITTING—THREE YEAR COURSE

First Year

One Month—Practice in solving simple problems dealing with measurements involving four fundamental operations—addition, subtraction, multiplication and division of whole numbers. Check methods.

Four Months—Use of fractions and decimals in problems relating to size of taps, drills, time employment, unit costs, tapers, spacing of rivets for single and double rivetted seams. Practice in making out bill forms involving percentage and discount.

Four Months—Problems in finding area of flat surfaces, such as triangular, rectangular, trapezoid, hexagonal, octogonal, circular forms, etc.

Three Months—Problems in finding area of irregular surfaces; such as half round, half oval, hollow, channel bar, bulb, angle, etc.

Second Year

One Month—Problems involving dimension work. Work is paid per foot thickness. Practice in calculating cost of work. Problems in distributing holes over given areas.

Three Months—Problems on the fuel calorific values of petroleum, B. T. U. Hydraulic pressure (jogging machines, keel benders), etc.

One Month—Problems in computing the length of diagonal frames, brackets, braces, etc., involving the use of square root and the solution of triangles.

Three Months—The use of the formula. Practice is given interpreting formulas and abbreviating rules into formulas—based upon previous work.

One Month—The apprentice is given considerable training in applied and constructional geometry such as erection of perpendiculars, parallel lines, etc.

Three Months—Locating centers of circles, drawing tangents, etc., the method of finding displacements, draft under loads, and the effect of weight.

Third Year

Six Months—Use of tables in handbooks on structural steel. Use of graphs and logarithms. The object of this work is to show the apprentice that many calculations may be shortened by the use of short cuts and logarithms.

Five Months—Theory and practice of the slide rule which involves a knowledge of logarithms. Considerable practice in manipulation of the rule.

One Month—To prepare an estimate for work planned and routed in minute detail for shipfitting and related trades. To check up material list showing exact sizes, amounts to be used and amounts of waste from commercial or standard sizes.

COURSE IN APPLIED SCIENCE (THEORETICAL KNOWLEDGE OF THE TRADE)—FOR SHIPFITTERS—THREE YEAR COURSE

First Year

One Month—Types and manufacturers' names of materials, tools, and appliances. Use of the common tools such as hammers, cold chisels, etc.

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Four Months—Study of the processes of drilling and reaming. Different kinds of drills and reamers, rivets, and bolts. Different kinds of cold chisels. How made. Meaning of hardening, tempering and annealing. Effect of heat on metals. Principles underlying caulking and very elementary principles of pneumatic tools.

Four Months—Study of the simple mechanical principles underlying the hand tools such as leverage (handles) of hammers, cutting edges (wedges), etc.

Three Months—Descriptions and uses of measuring tools such as metal gages, micrometers, calipers. Units of work. Specific gravity (weight of metal per square foot).

Second Year

One Month—Study of the raw materials and processes that are used—cast iron, wrought iron, steel, mild steel, high carbon steel, special treatment of steel, varadium and tungsten metals.

Three Months—Study of the properties of water pressure involving the properties of liquids applied to hydraulic machinery, such as hydraulic keel, benders, etc. Buoyancy of water—"Why a boat floats"—watertightness.

One Month—Study of air pressure involving the properties of gases. Mechanism of pneumatic tools, airtight condition of compartments.

Three Months—Explanations of the mechanism of various power tools used in different plants, such as butt riveter, drill presses, punching machines, cold press, etc.

One Month—A short description and study of the design of a ship—shape, parts, materials used, etc.

Three Months—The scientific principles underlying the design of a ship. The theory of displacement and buoyancy (elementary).

Third Year

Six Months—The principles of hygiene and safety explained to apprentices. The care of the body, the kind of clothing worn, the dangers of the trade and how they may be prevented—such as falling from scaffolds, etc. The theory of displacements and drafts under loads, center of gravity, buoyancy, inclination under weights.

Five Months—The principles of the strength of materials applied to iron, steel, etc., in a ship. Use of such terms as tensile, shearing, compressive, etc. Effect of perforating metals. Different kinds of joints, efficiency of joints.

One Month—Composition of metals, alloys, such as different grades of steel, copper, brass, bronze, babbitt. Electrolysis of metals such as found in shaft struts.

COURSE OF STUDY IN INTERPRETATION OF BLUE PRINTS FOR SHIPFITTERS—THREE YEAR COURSE

First Year

One Month—Practice in making rough pencil sketches of nuts, bolts, rivets, screws, washers, taps. Both isometric and plan and elevation views.

Four Months—Practice in making rough pencil drawings of tools such as files, chisels, wrenches, various hammers, appliances and metals; heating furnace; oxygen acetylene set, etc.; simple plates, rivets in section, angle bars, tee bars, Z bars, channel beams in two views to develop the idea of projection. To illustrate: rivet spacing, design in one view should be given to illustrate simple connections; that is, a deck to a bulkhead, bounding bars, etc. in watertight, non watertight and oil tight bulkhead spacing. Various types of rivets in plates (in section).

Four Months—Pencil drawings of shapes of tees, I's, and channels. Two view drawings of bulkheads, bracket plates, hatches, manhole doors, watertight and non watertight gun ports, hammock berthing, etc.

Three months—Drawing of blower foundations, scuttle butt brackets, tank foundations, knee beam connections at decks and floors; hatches and door combings, ammunition stowage, sanitary partitions, companion ways, access trunks, etc.

Second Year

One Month—Drawing of simple parts of machines, such as pulleys, levers, spindles, gears, cutting heads of planing and scarfing machines. This will give considerable practice in the use of drawing instruments.

Three Months—Practice in reading blue prints: distance between centers of rivets, interpretation of riveting tables, the drawing of floors, intercostals and lines on shell slope of keel, drawings of keels (vertical, bilge and docking).

One Month—Drawing of steel forms of shear blades and parts of joggling machines (two views).

Three Months—Instruction in the location of parts on plans used in connection with the drawings of combings, stowage; applied geometrical construction—erecting perpendiculars, parallels;

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reproducing angles and division of pitch circles. Practice in the location of the sea openings of a ship—hatches, gratings, port holes, shell hoists, etc., from use of offsets.

One Month—Practice in drawing assembled frames, engine foundations, and double bottom sections.

Three Months—Practice in drawing assembled parts of a ship; frames, lattice work for torpedo bulkheads, cage masts, etc. Location of longitudinals and lines of shell and decks from offsets. Practice in picking bars from book tables. Begin the study of the simple shapes of the expansion on irregular surfaces.

Third Year

Six Months—Drawing of the bridge ammunition hoist, armored uptakes and views on turrets; work on compartment rearrangement. Locating deck scuppers, boat stowage supports, etc. Considerable practice should be given in "inking in." All drawings made in the third or last year should be inked, traced and a blue print made of at least one to illustrate the principle of blue printing.

Five Months—Practice in making drawings from data or sketch of parts made in the shop. The apprentice should also be taught how to mark the drawings so as to show installation of parts. Transverse and longitudinal drawings from offsets of inner and outer bottoms, bulk heads, location of doors, trunks, etc.; through plating and bulkheads, gun port shutters, ship ladders, floors and deck frames, splinter bulkheads; foundations, tanks, boilers, engines, pumps, gun and turret, etc. Drawing of the intersection of objects by planes at angles, as for example, chain pipe on deck, shell hoist through turret levels, etc. Drawings involving triangulation to lead up to the drawing of developed shell plating.

One Month—A cross section drawing through a given frame; a longitudinal section drawing of a ship. This is given to test the apprentices' knowledge of the ship and the use of related plans.

MADE BY STUDENTS IN THE SCHOOL OF INDUSTRIAL ART, TRENTON, N. J.

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EDITORIAL REVIEW OF THE MONTH

A SOUND POLICY

WHEN the Government announced that in order to meet urgent demands it would ask the colleges and technical schools to give eight-weeks courses to train electricians, machinists, blacksmiths, carpenters, automobile mechanics and the like for service in the Army, there was much speculation among technical school men as to the character of such courses. Would the Committee in charge require that men be trained in narrow specialized processes, or would it seek to give men the more general fundamental processes of each of the trades listed? In other words, would the committee adopt the point of view of the extremist in vocational training, or the broader viewpoint that has been held by thoro mechanics and educators who have had sound mechanical training and several years of real experience in teaching shopwork?

We are glad to call attention to the fact that the Committee has satisfactorily answered this question thru its statements and we believe thru its acts. The following, quoted from the letter of a high official, is here presented as proof:

> The training should be designed to develop general knowledge and skill, of an elementary kind, rather than to fit a man for highly specialized duties in the Army.....In the opinion of the Committee it is more important to develop the capacity of these men and to get them to thinking and working along sound lines than it is to give them a specialized technic which they will quickly get anyway after they are assigned to special duties in active service.

HALF-TIME SCHOOLS AND PART-TIME SCHOOLS

"ENGLAND is abandoning its half-time system of schooling while America is moving toward such a system." Such a statement might be made by a superficial reader of current educational news. While it contains a half-truth, it by no means fairly represents the whole truth. England is getting rid of its old "half-time schools" for children who ought not to be in the factories at all and ought to be in school full time; and she is adopting a modern part-time continuation school system for industrial workers who are physically old enough and strong enough to work in the factories, but should not be deprived of all education just because they are engaged in productive labor. The United States never did take kindly to the old half-time school idea for children, and now has lived so long under laws making full-time schooling compulsory up to fourteen or fifteen years of age that most American teachers never knew such an institution as a half-time school of the old type. But now that there has come in the United States, as in England, a great demand for the continuation of schooling for the boy or girl who, under the law, is allowed to leave the full-time school and go to work, the new part-time school is coming into being, either in the form of a day continuation school or a cooperative part-time school. In this movement the schools established by large industrial corporations have been an important factor, tho, it may be believed, they have not set the type of such schools which will be regarded as the standard in the future.

THE OLD HALF-TIME SCHOOL

SOMETIMES it is helpful, at least negatively, to turn back the pages of history for a viewpoint or a motive in education. This seems to be the case in connection with the half-time schools of England. I was looking over an associa-

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tion report of 1862 a few weeks ago and came across a paper on the "Half-Time System" written by Rev. J. P. Norris who, when the paper was written, had been for thirteen years an inspector of such half-time schools. His paper began with this sentence: "By the Half-Time System is meant a compromise between the claims of labor and the claims of school, whereby children under a certain age are obliged to give a portion of their time to education, as a condition of employment." To one who reads this sentence with full understanding, it tells a sad story. What it connotes is a chapter in educational and industrial history that England would now be glad to forget, except as a warning. It reminds one of the early development of the factory system when children were freely exploited by employers; when mere babies, only eight years of age, were allowed to work in the cotton mills half the day if they went to school the other half; when parents considered themselves deprived of their rights if they were forced to send their children to school, even a half-day, and so received less pay for the labor of their off-spring from eight to eleven years of age; when any schooling beyond the mere rudiments was regarded as undesirable for the children of the poor; but, fortunately, also, when there were a few men and women who in the name of charity were devoting their lives to the protection and welfare of these same children. Mr. Norris was well acquainted with the workings of the half-time system in the manufacturing centers of the North of England where the law was enforced better than in the mining or in the agricultural districts. He believed that children should attend full-time schools up to eleven years, but had become convinced that from the standpoint of education and discipline the half-time system was desirable after the eleventh birthday up to thirteen or fourteen when no more schooling was expected for children of this class.

The present-day readers of the paper of Mr. Norris are surprised to have him say that "considering solely the child's interests in an educational point of view" the half-time system was better than the full-time during these years. From the standpoint of the modern progressive elementary school, this seems a "hard saying", but who, after learning more of the formal routine character of the school instruction of those days, shall say that he was not correct in his observation? England today with her modern schools, her appreciation of the value of childhood, her democratic ideals is trying to say, as we have tried, that industry has no rights concerning children under fourteen years of age. The new law requires all children to attend full-time schools up to the age of fourteen, and local authorities may raise the age to fifteen.

Some of the reasons given by Mr. Norris for favoring half-time schools bring out still more strikingly the viewpoint of the advocates of the old half-time system. He says, "The formation of student-like habits is undersirable for those who are to support themselves by manual labor. By student-like habits, I mean especially a sedentary habit of body, and a disproportionate cultivation of the sensibilities of the mind. It is this which often makes the head girl of a good parish school turn out a bad housemaid, and it is this which makes farmers say they can make nothing of lads unless they go to the plough early.

THE MODERN PART-TIME SCHOOL

WHATEVER there may be of wisdom in this statement, the modern democrat finds it distasteful because of the disagreeable things it implies: first, that some of us are fore-ordained to be domestics and plowmen (tho,

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if in accord with our capacity and ambition, we would not object to being either) and, second, that housemaids and plowboys should not be allowed to have cultivated minds.

So it becomes evident that there is a marked difference between the old half-

ROBERT J. LEONARD

time school, for English factory children, and the modern continuation or part-time school for industrial workers from fourteen to eighteen years of age. The modern school presupposes (a) a good elementary education, or at least, time enough in school for most children to secure such an education; (b) freedom for ambition and capacity to work out their own destiny in the individual; and (c) that there is no ban on the "cultivation of the sensibilities of the mind" even by a housemaid or a plowboy.

THE MANUAL ARTS IN RURAL SCHOOLS

THE establishment of manual arts instruction in rural schools generally is yet to be accomplished, but there are indications of progress in that direction. We are always encouraged when we find a rural school teacher who sees the value of manual arts work and really wants such work in her school. This attitude coupled with expert manual arts supervision will bring the desired result.

A short time ago our attention was called to a pamphlet by Miss Ellis C. Seale of the Rural Schools Department of the Kent State Normal College in Ohio. In this pamphlet, entitled "The Vital Problem in Rural Schools", Miss Seale discusses two propositions which she regards as necessary to accomplish the needed reform in one-teacher schools. The first of these is "lessening the number of recitations for each day", and the second is "introducing manual arts for boys and girls". From her discussion of the latter proposition is taken the following quotation.

> At first thought it seems that the introduction of manual work is simply another addition that will further complicate the situation, but the introduction of the right kind of manual work will put new vitality into and give a new meaning to the other subjects in the curriculum. This fact is not as yet recognized by all school men, but those who investigate easily come to that conclusion. Arithmetic that deals with chalk marks on the blackboard or pencil marks on paper or with spoken terms is lifeless indeed when compared with the vitalized arithmetic that is possible where work in doing gives the new and real meaning to the subject. In a similar manner this work gives new interest to all other subjects. On this ground alone manual work is entitled to a place in our schools but for its own sake it is entitled to such a place.

PROFESSOR LEONARD CALLED BACK TO HIS HOME STATE

THE University of California has established a new department of vocational education and has called to its head Professor Robert J. Leonard, of Indiana University, and during the past year, regional director of industrial education under the Federal Board for Vocational Education with headquarters at Indianapolis. The Middle West will regret the loss of Mr. Leonard and congratulate California on its success in inducing him to return to the state of his birth.

Mr. Leonard was born in San Jose, California. Before leaving that place for the

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East, he had followed the course of education in the elementary schools, the business college, the high school and the normal school. After six years of experience in teaching and the supervision of industrial work in Belmont, Fresno, and Berkeley, he went to Teachers College, New York, in 1910. At that institution he secured the diploma in industrial education in 1911, the B. S. degree in 1912, the A. M. degree in 1914 and has practically completed his work for the Ph.D. degree. For three years while at Teachers College, he was the supervisor of industrial art education in the practice schools of Teachers College. The following summer, 1914, he made an investigation of the paper box industry for the New York State Factory Investigating Commission. Then he went to the University of Indiana as professor of vocational education. To a wide circle of readers, Mr. Leonard is known thru his many magazine articles and his reports of investigations. Among the latter are: "An Investigation of the Paper Box Industry to Determine the Possibilities of Vocational Training," "A Study of the People of Indiana and Their Occupations for Purposes of Vocational Education," "Some Facts Concerning the People, Industries, and Schools of Hammond, Indiana," and "Vocational Education Survey of Richmond, Indiana."

INDIANA SECURES PROFESSOR BUXTON

GEORGE F. BUXTON of Stout Institute, Menomonie, Wis., has been appointed associate professor of vocational education at the University of Indiana. His work will be to build up the work of industrial teacher training in the state under the Smith-Hughes law. His headquarters will be in Indianapolis. This is another of the important changes that have come on account of the rapid expansion of industrial education during the war. Mr. Buxton has been in charge of the training of manual arts teachers at Stout Institute since 1905, and during that time the staff has grown from three teachers to eighteen and the students from twenty to one hundred and fifty-seven. He has been, therefore, a very large factor in the upbuilding of an institution that now occupies one of the strongest positions in its field. During this time, also, he has been a leading spirit in state and sectional organizations of manual arts and vocational teachers, a contributor to professional journals and the editor of the quarterly *Stout Institute Bulletin.*

GEORGE F. BUXTON

Mr. Buxton received his early schooling in Portland, Me. In 1899 he graduated at Pratt Institute; in 1904 at Teachers College, New York, receiving the diploma in manual training; in 1908 he received the B. S. degree in education at Columbia University, and since then has spent summers at Columbia and at the University of Wisconsin. Before going to Stout Institute he taught at Newark, N. J., Portland, Me., and Springfield, Mass. Since that time he has taught summers at Ohio State University and the Oregon Agricultural College. For twelve years he has been the director of the summer sessions at Stout Institute.

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WAR-TIME DEVELOPMENT AT BRADLEY INSTITUTE

THE survey of Bradley Institute, conducted by the U. S. Bureau of Education, followed by the rapid development of technical and vocational courses since the coming of the first contingent of army mechanics last April, has led to an important change in the administrative force. Charles A. Bennett, professor of Manual Arts, has been appointed to the new office of Dean of Technology. Under his supervision will be the new national service courses in technical subjects, trade and day continuation courses, and courses leading toward mechanical and electrical engineering. If Bradley Institute is needed to assist in the re-education of returned soldiers such work will also come under Mr. Bennett's supervision. Already a new one-year course for electricians has been started, and plans are developing in the direction of a material expansion of the one-year automobile course. The manual arts and vocational courses for teachers and the instruction given to army mechanics will continue to be under Professor Siepert, as during the past year. The special significance of the new appointment lies in the fact that it suggests a stronger vocational development of the Institute after the war.

A SMOKER'S INFLUENCE

ONE of our readers has called attention to the use of tobacco by manual arts teachers. He says: "It is a nearly universal habit among our teachers here, and I feel very strongly on the subject. We cannot expect boys to leave cigarettes alone when their teachers set them a wrong example."

We fully agree with this last sentence. Altho we have heard of teachers who have made themselves believe that they could get nearer their boys, and have more influence over them by smoking with them, some sorry failures have come from this mistaken procedure, and the reason is not far to seek. The boys themselves believe that smoking is not good for them, but it pleases them to do it just the same.

A little vice
Seems rather nice

But they do not expect the teacher to have even a little vice of that kind. If

Little Boy Blue, come blow your horn, And tell all the people to use more corn You're the little boy to save the wheat So the boys in the trenches may have it to eat.
LITTLE MISS MUFFET DIDN'T JUST BLUFF AT TRYING TO SAVE THE FOOD
SHE LISTENED TO HOOVER AND TRIED TO IMPROVE HER WAYS OF FEEDING HER BROOD

TWO OF THE POSTERS USED IN COLUMBIA, MO., TO ADVERTISE THE FOOD SAVINGS CAMPAIGN. THE MANUAL ARTS DEPARTMENT OF THE STATE UNIVERSITY MADE THE BOARDS AND THE ART DEPARTMENT PAINTED THEM. THE RHYMES WERE FORMULATED BY GEORGE NARDIN, OF THE ENGLISH DEPARTMENT.

the teacher smokes tobacco that fact is a sweet bit of gossip to pass on to the other boys and to any grown-up who speaks against the smoking habit. It is a very healthy sign when boys take an inventory of a teacher's vices, little or big. And it is our opinion that if a man cannot sacrifice a few vices for the sake of the boys whom he teaches, he would better never become a teacher. What is the use of bearing the name of teacher if you are not willing to help the moral tone of the next

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LET US WIN THE WAR

To do so the Country Must Have Skilled and Willing Workers

BOYS AND MEN WHO CAN DO THINGS

Choose from this list the training you are willing to take to fit you for service with your Country or your State

ASSIGNMENT 1		ASSIGNMENT 2
Government Service	Machinists	Commercial Service
" "	Toolmakers	" "
" "	Electricians	" "
" "	Steamfitters	" "
" "	Mechanical Draftsmen	" "
" "	Architectural Draftsmen	" "
" "	Plumbers	" "
" "	Patternmakers	" "
" "	Shipfitters	Merchant Marine
" "	Loftsmen	" "
" "	Carpenters	" "
" "	Drillers	" "
" "	Reamers	" "
" "	Riveters	" "
" "	Painters	Commercial Service
" "	Printers	" "
" "	Textile (Cotton and Silk)	" "
" "	Carders	" "
" "	Spinners	" "
" "	Weavers	" "
" "	Dyers	" "
" "	Designers	" "
" "	Radio and Buzzer Service	Drafted Men
" "	Screw Machine Men	Commercial Service
" "	Concrete Workers	" "
" "	Masons	" "
" "	AUTOMOBILE (Trouble and Repair Men)	" "

The government will place drafted men in positions when the State Trade Schools certify them as competent in a particular line.

The factories in our State will employ you when the State Trade Schools grant you a diploma signed by the Governor and the State Board of Education.

State Trade Schools are free to all. Register at Putnam, South Manchester, Torrington, Danbury, Bridgeport, New Britain, New Haven.

THE STATE BOARD OF EDUCATION

Trade Instruction Department Room 42, Capitol, Hartford

THE WAY THEY DO THINGS IN CONNECTICUT.

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generation. To help prevent smoking may be a very little lift, but it is conceded to be, at least, that much of a lift.

We know of superintendents and high school principals who will not employ a man who smokes, and we know of men who have failed to get desirable appointments because they smoked tobacco. I have in mind one case in particular. The man was a normal school graduate with successful teaching experience, and was about to graduate from a special manual arts course. He was about to be offered a very desirable position in a large high school when the principal decided he wanted to be a little surer of the man's influence, and wrote a letter asking several questions about the man's personal habits. When he learned that the man smoked tobacco he refused to give any further consideration to his application.

This refusal caused the young man to revise his thinking about smoking. He said "I have always prided myself on the fact that I have never allowed my smoking to interfere with my work or my success in any way. If it is going to interfere with it now, then smoking has to go." The young man was informed that smoking may have interfered without his knowing it. (He used to smoke in a closed room and then come to class with his clothing full of fumes, and he looked stupid.) A few weeks later he came to me and said, "If anybody asks you again whether I smoke, tell them I don't. I've quit. I haven't smoked since I saw you before." And then he added, "I didn't believe what you said about smoking in my room, but I have found it is true. I find that I can think clearer now that I don't smoke. I would never have believed it if I hadn't tested it myself."

If the teacher can think better without smoking in his room and if he can be a better example for the boys he teaches if he don't smoke outside his room why should he smoke at all?

WASHINGTON CORRESPONDENCE

THE WAR AND EDUCATION

THERE has always been theoretical, and in some quarters practical, recognition of the value of education, and particularly of technical preparation for special kinds of work. But the demonstration afforded by the developments of the Great War is quite without a parallel in history. The college-trained man has been tested out together with every other kind of man and has "made good." He has proved the worth of his training in such a multiplicity of emergency tasks and under such a variety of circumstances that it will be impossible hereafter to debate the question of the value of college training. The conclusion does not rest on sentimental or theoretical grounds, or on prejudice. It is a verdict based on performance.

I am impressed by the cumulative evidence of the way in which this conviction is making itself felt in the counsels of the administration here in Washington, and finding expression in official acts. For a generation or more America has been accustomed to think of Germany as the exemplar of governmental concern for education, but this is no longer necessary. Our own government is developing an aggressive and comprehensive educational policy, the potentially beneficial effects of which cannot be fully appraised even by those most directly responsible for its administration. I am quite sure that the country as a whole does not fully comprehend what is involved.

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Great interest, therefore, attaches to the plans of the War Department so far as they will affect schools of secondary and higher grade this fall. Preliminary announcements were made during August, but as this is written the final details are not ready for publication. A few weeks ago there seemed to be ground for apprehension lest the colleges and universities be emptied entirely of young men, notwithstanding this would be regarded generally as a national calamity. In view of the action contemplated by the War Department, however, there is reason to believe that these institutions, and high schools as well, will be taxed to their capacity, for a portion of the coming year at least.

FEDERAL BOARD FOR VOCATIONAL EDUCATION

DURING the month considerable progress has been made in developing an organization to deal with the new duties and responsibilities laid upon the Board by the passage of the Smith-Sears Act, providing for the rehabilitation and return to civil life of disabled soldiers and sailors.

REMOVAL TO NEW OFFICES

THE reorganization and enlargement of the staff made necessary a considerable expansion in office space. This was found impracticable in the Ouray Building, consequently on August 1 the Board moved to the building at the corner of 6th and E Streets, N.W., where the main offices are now located. Additional quarters for certain divisions are provided at No. 606 F Street, just around the corner.

CIVIL SERVICE EXAMINATIONS

IN ORDER to fill positions created by the Board for the administration of the Vocational Rehabilitation Act the U. S. Civil Service Commission announced a series of competitive examinations to close October 1, 1918. Circular No. 533 lists the positions and salaries, as follows:

Chief, Smith-Sears Division, $5,000.

Superintendent for Cooperation, $3,000-$4,000.

Superintendent for Case Work, $3,000-$4,000.

Superintendent of Records and Returns, $3,000-$4,000.

Superintendent for Vocational Advisement and Training, $3,000-$4,000.

Superintendent for Employment; Survey and Placement Officer, $3,000-$4,000.

District Vocational Officer, $3,000-$4,000.

Medical Officer for District Vocational Office, $2,500-$3,500.

Supervisor for Advisement and Training in District Vocational Office, $2,500-$3,500.

Vocational Adviser in Hospitals, $3,000-$4,000.

Special Agent for Safety and Hygiene, $2,500-$3,500.

Special Agent for Agricultural Rehabilitation Courses, $2,500-$3,500.

Special Agent for Research in Trade and Industrial Rehabilitation Courses, $2,500-$3,500.

EDUCATION FOR THE TEXTILE INDUSTRY

ON AUGUST 13 there was held at Atlanta, Ga., thru the cooperation of the Federal Board and the Southern Commercial Congress, a conference on federal aid for education for textile workers.

Resolutions were adopted requesting the Federal Board to make a study and report on the possibility of establishing schools under the Smith-Hughes Act which will give needed assistance to textile workers and manufacturers. In response to this request an investigation will be made under the direction of Roy Dimmitt, regional agent of the Board for the Southern District, with the assistance of Mrs. Anna L. Burdick, special agent for women's trades, and such other assistants as may be required.

Visits will be made to a number of existing schools, under public and private

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control, which are giving some form of vocational or continuation education to textile employes, with a view to finding out to what extent these schools or classes meet the requirements of the Smith-Hughes Act. Steps have been taken to secure the appointment of a committee of textile manufacturers and employes, to meet with Mr. Dimmitt and his staff from time to time for counsel and advice.

It is proposed to select at least one community in which a type school may be established thru cooperation of the Federal Board, State Board, local board of education, and organizations of manufacturers and employes. At the conclusion of the study a report will be prepared showing the results, and setting forth the plans of such schools as may be established or recommended.

A similar piece of work will be undertaken in the far west, in cooperation with the mining interests. In this case the study will be made under the direction of J. C. Wright.

PART-TIME SCHOOLS

THE Federal Board has adopted resolutions which place a liberal interpretation on Section 11 of the Smith-Hughes Act, relating to part-time instruction. These resolutions are set forth in Circular Letter No. 145, dated August 26, 1918.

In cases where persons definitely scheduled for employment in a trade, by written agreement with the employer, are given instruction before employment fitting them for entrance into such employment, such instruction may be considered as part-time instruction, and, if approved, federal money may be used for its support. Such classes may be open also to those already employed.

Such part-time classes may be carried on in the school, in the shop, in classrooms adjoining the shop, or elsewhere. The instruction may be in manipulative processes, related to these processes, or both. Reimbursement may be made from federal funds for one-half the salary of the instructor, including the coordinator. The course may be given once, twice, or oftener each year, or it may be operated continuously.

These and other provisions which may not be noted here for lack of space, will undoubtedly have the effect of greatly stimulating the development of part-time instruction.

COMMISSION GOES TO FRANCE AND ENGLAND

THE Federal Board decided to cause a study to be made at first hand of the work done abroad in the rehabilitation of disabled soldiers and sailors. For this purpose a commission was organized, consisting of F. G. Nichols, assistant director for commercial education under the Federal Board, chairman; Prof. Edwin L. Holton, dean of the school of education, Kansas Agricultural College, Manhattan, Kans., representing agricultural education; W. H. Magee, director of industrial education, public schools, Richmond, Va., representing industrial education.

The commission sailed from "an Atlantic port" on August 27th. About four weeks will be spent in France and England studying the various types of schools and classes which have been organized in those countries.

LEAVE OF ABSENCE

ON ACCOUNT of ill health Miss Berry, assistant director for home economics, has been granted leave of absence for six months. Miss Anne Richardson, University of Texas, has rearranged her plans and will remain with the Federal Board during this period as acting assistant director.

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SHOP NOTES AND PROBLEMS

ALBERT F. SIEPERT, Editor

PEDESTAL

THIS problem can be used in any grade. The type of construction selected will depend upon the grade or the capacity of the individual pupil. It offers many possibilities in applied design. The form in which it is shown in the accompanying photograph and drawing, with woven splints in the lower panels, has been successfully worked out in beginning seventh grade and in ungraded classes.

From the standpoint of construction the pedestal is nothing more than a series of bread-boards. These involve the use of the rule, pencil, plane, gage, saws and square. Plane the 11″ square first. If this is planed under size use it for the 10″ square or for the 8″ or the 6″ or even one of the four 3″ squares. This plan of procedure will reduce the possibility of totally spoiling boards. Squareness is the main consideration in this work. Dimensions are less important.

The boards for the post of the pedestal should be cut and planed next to the proper width. Here, for the first time, the student has the problem of economy in getting out stock and the proper use of the saws. He is given a board 5 ft. 7″ long, 11″ wide, and 3″ thick out of which he must get two pieces 2½″ wide at one end, and 4½″ wide at the other end, and 33″ long; also two pieces 4″ wide at one end and 6″ wide at the other end and 33″ long. The pupil should be held down to accuracy in planing to the required dimension.

Assemble the post of the pedestal with screws or nails, screws being preferred. When this operation is completed you are then ready to square up the ends of the post. To do this set a sliding T-bevel at any angle; then draw a line on one side of the post using an adjacent side of the post as a working edge. Without changing the angle of the bevel, draw another line across the same face but placing the bevel against the other adjacent side as a working edge. The angle thus produced by the intersection of these two lines when bisected will give the right setting of the T-bevel for squaring off the ends of the post.

Fasten on the top and bottom boards as shown in the drawing. The next operation is that of weaving the panels of splints for the lower part of the pedestal. (See Perry's "Seat Weaving")

Finish with stain and wax. This pedestal allows for a liberal variety in construction and some opportunity for constructive design in the special mediums employed. It is well adapted to seventh grade pupils.

—J. E. SMITH,
Joliet, Ill.

MAKING KNITTING NEEDLES

Philip S. Hasty, director of manual and industrial training, Topeka, Kansas, has written to us concerning a successful method of making Red Cross knitting needles. He says: "These needles are made with a dowel cutting machine operating in connection with an ordinary turning lathe. It consists of three chucks of different sizes, bushings from 3/16″ to ¾″ and a cutter which can be fastened to a block to slide along the ways of the lathe. There is a square end on the dowel after being cut and the boys round these off somewhat on a disc sander. The needles are pointed, sanded and waxed as has been described a good many times.

"This dowel machine is inexpensive—costing not over two dollars or perhaps two fifty and can be obtained through the T. B. Rayl Hardware Co. of Detroit, Mich."

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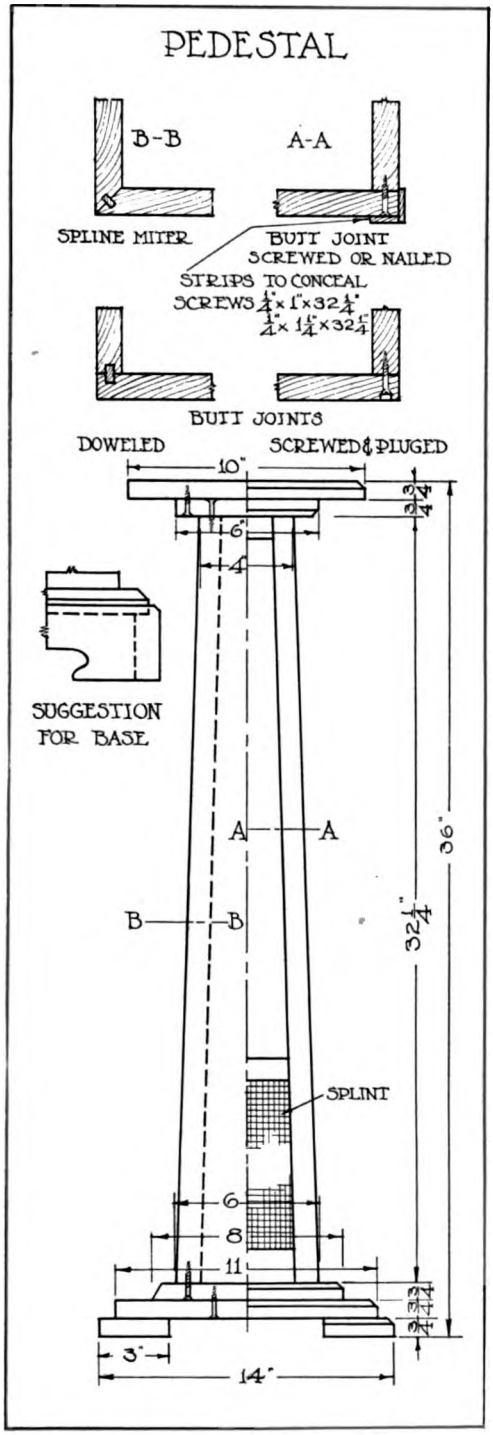

SHOP KINKS

Have you ever noticed when a screw turns hard how much easier it will turn if you extend the index finger of your right hand along the handle of the screwdriver, as shown in Fig. 1, and grasp the finger and screwdriver together with your left hand turning both at the same time, Fig. 2?

FIG. 1.

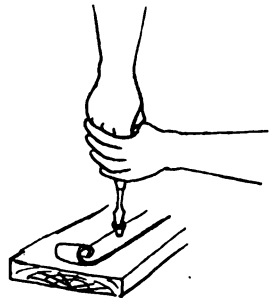

FIG. 2.

There are times when one hasn't a screwdriver-bit around or where one cannot be used, and I have found this method very useful, and where a screw otherwise could not be budged.

W. B. TITSWORTH,
Franklin Junior High School,
Minneapolis, Minn.

A RED CROSS COLLECTION BOX

During a recent Red Cross drive an emergency call was sent to our school by one of the parents who called up on the phone about eleven o'clock in the morning, stating that he wanted a half dozen boxes to be used the evening of the same day for taking up collections in several of the larger moving picture theaters in the neighborhood. Paper box manufacturers to whom he had appealed were not able to give him any encouragement that they could make the boxes in the shape he desired so he turned to the school for help. A public appeal was made at the morning assembly of the school and pupils who had study periods to spare were invited to report at the shop. This resulted in groups of pupils working in relays during the rest of the school day and after school, with the result that the boxes were delivered in time for the evening performances at the various theaters. The drawing is self-explanatory. The sides were made of one-eighth inch bass wood and this was covered with bright red card board, glued on, an opening being left

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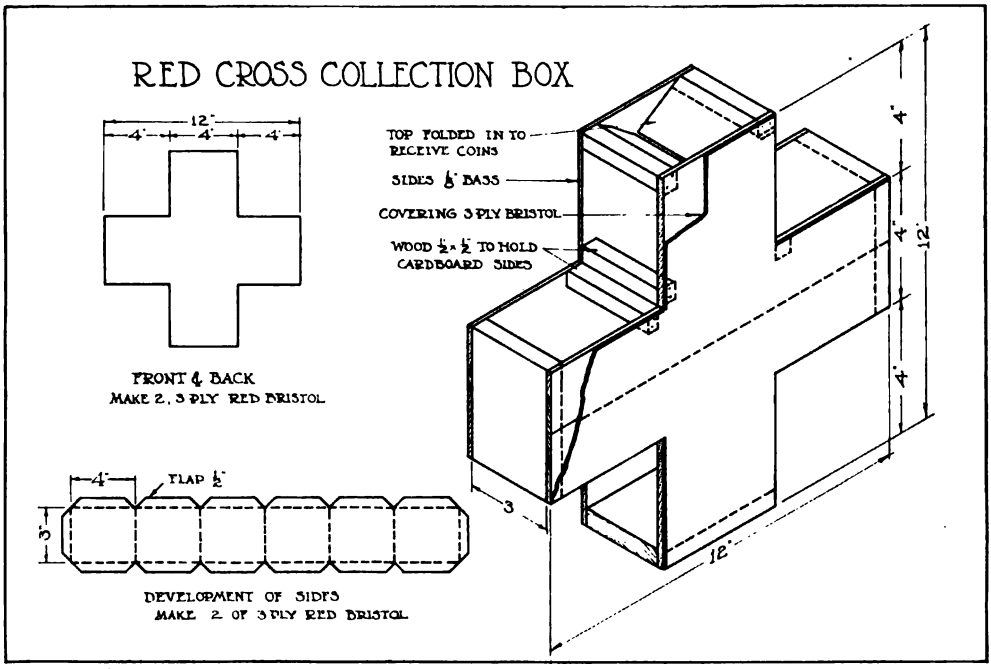

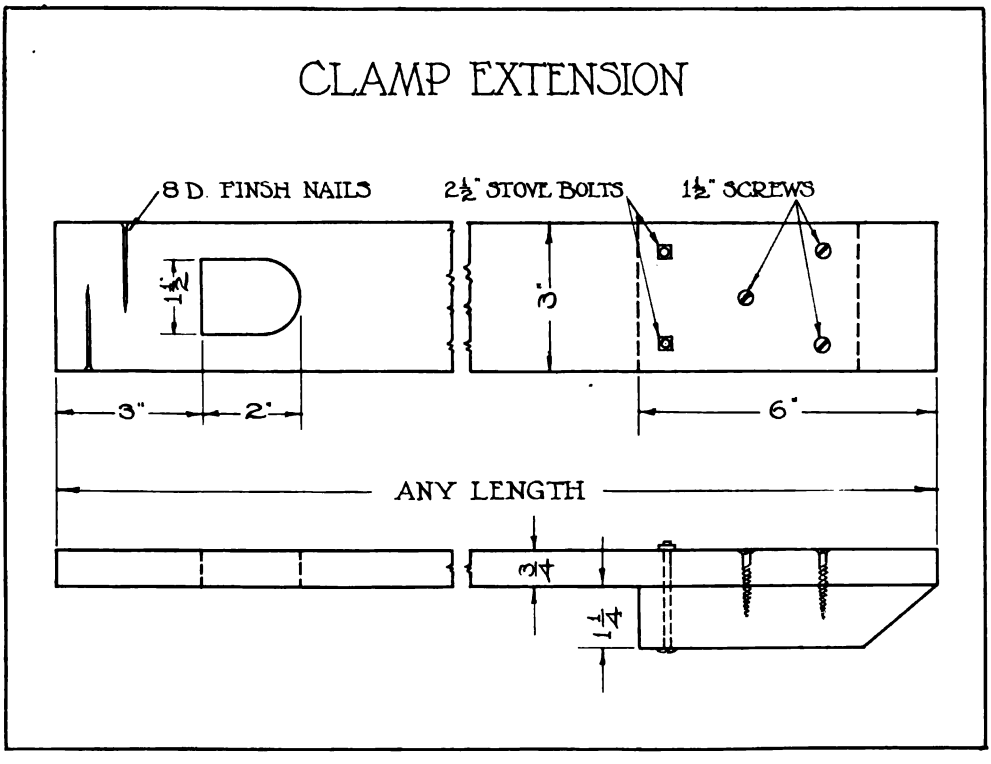

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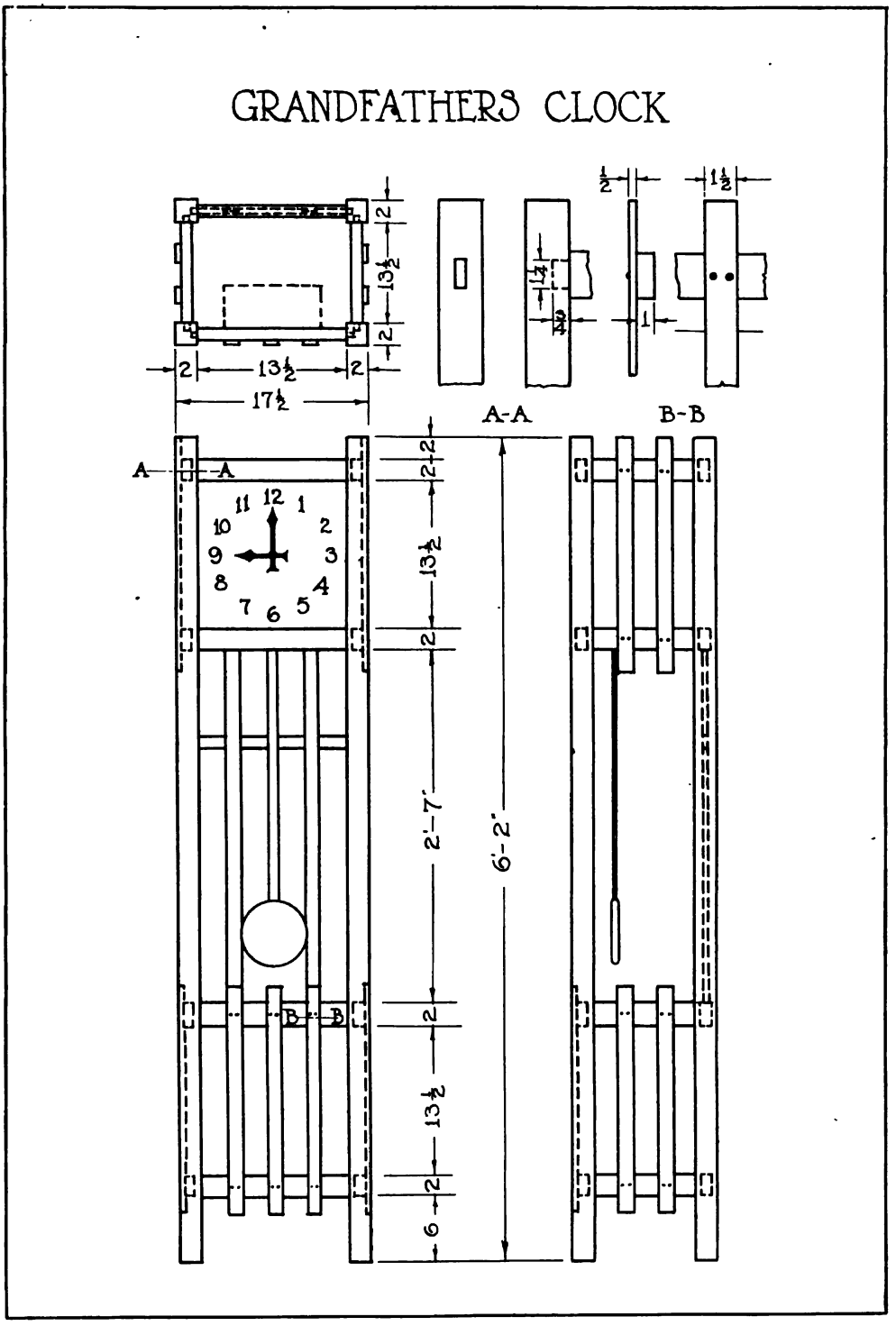

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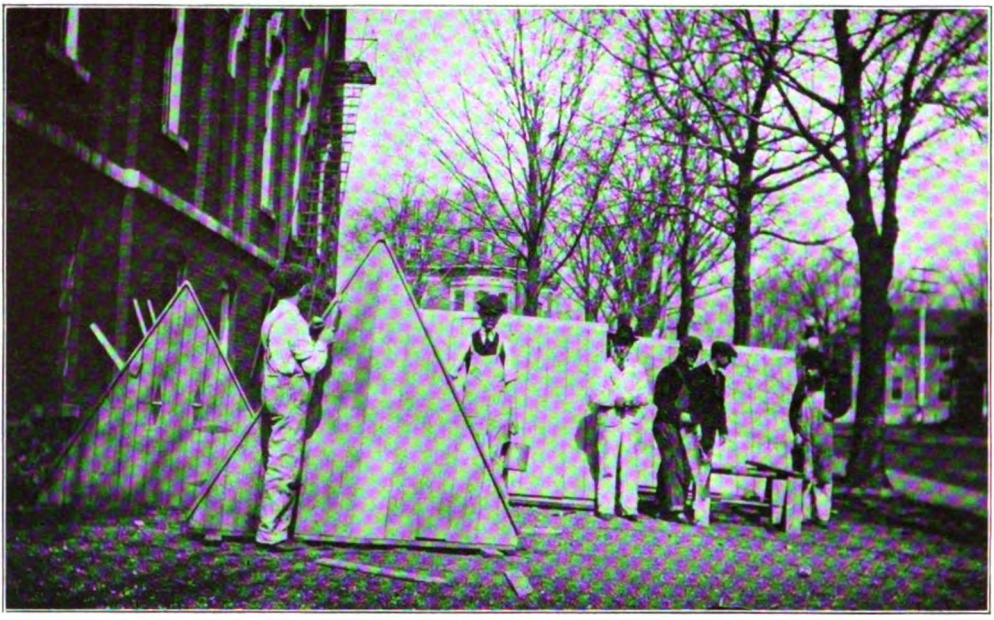
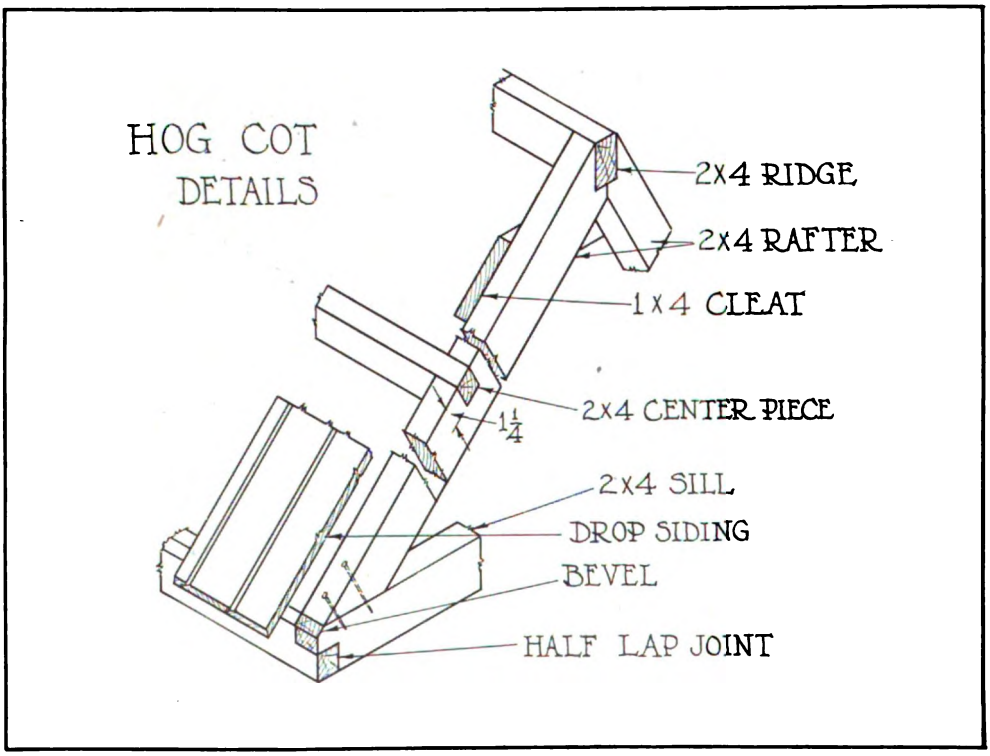


HOG COTS BUILT IN HIGH SCHOOL, WASHINGTON, IOWA.



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in the top to receive coins. In one of these boxes something over one hundred dollars was collected in one evening and of this amount only about seven or eight dollars consisted in dollar bills and half dollars. The rest of the amount was made up entirely of "small change." The attractive and novel design of these boxes was no doubt responsible for enticing the pennies, nickles and dimes from the pockets of the movie patrons. We shall probably have more red cross drives in the future so I submit the drawing in the hope that the suggestion may be useful to others.

L. W. WAHLSTROM,
Francis Parker School,
Chicago.

CLAMP EXTENSION

This device was used by the writer while working for a furniture-making company. It has proven equally useful in school shopwork. The movable jaw of the furniture clamp is inserted in the slot so that the block attached to the other end may be used as a jaw. This device permits the use of short clamps for glueing wide boards without "doubling the clamps and marring the work." The carpenter can make good use of the device as it can be made right on the job and used in connection with a clamp short enough to be carried in a tool chest. Maple is the most satisfactory material as the screws hold well in the block, and the end fastening on to the clamp jaw is not apt to pull out.

CLYDE OLTMAN,
Berlin, N. H.

ROPE QUOITS

In the April number of *Scouting*, under the title "Making Games for Soldiers," Dan Beard called attention to rope quoits. To play this game four rope rings and two stakes or two pins in blocks are required. The rope quoits are made of 1″ manila rope. When completed they should be 8″ in diameter, outside dimension. The strands should be neatly spliced and then tightly wound with waxed twine or adhesive tape. If pins, instead of stakes, are used they should be made of hard wood, 8″ high and 1″ in diameter, and rounded at the top. The pin should be wedged into a round hole in the center of an 8″ square base.

GRANDFATHER'S CLOCK

The accompanying working drawing shows a satisfactory project for high school pupils. The construction is simple and involves only the making of mortise-and-tenon joints, the slats being fastened in position by round-head screws. Oak was the wood used, and a brown stain applied as a finish. Clock works can be purchased from manufacturers at various prices.

J. N. LEINBACH, Lansford, Pa.

HOG COT

One of the interesting projects undertaken at the Washington, Iowa, High School was the building of individual hog cots. Some experience in carpentry was gained by this project, and a ready site was found for the finished article. The cost of each cot was about $12, while the selling price was set at $20. The profit was used in the purchase of additional shop equipment.

LLOYD T. SMITH,
Y. M. C. A., Mason City, Iowa.

MADE BY WILBUR G. STUCKE, A STUDENT IN THE HIGH SCHOOL AT BEARDSTOWN, ILL.

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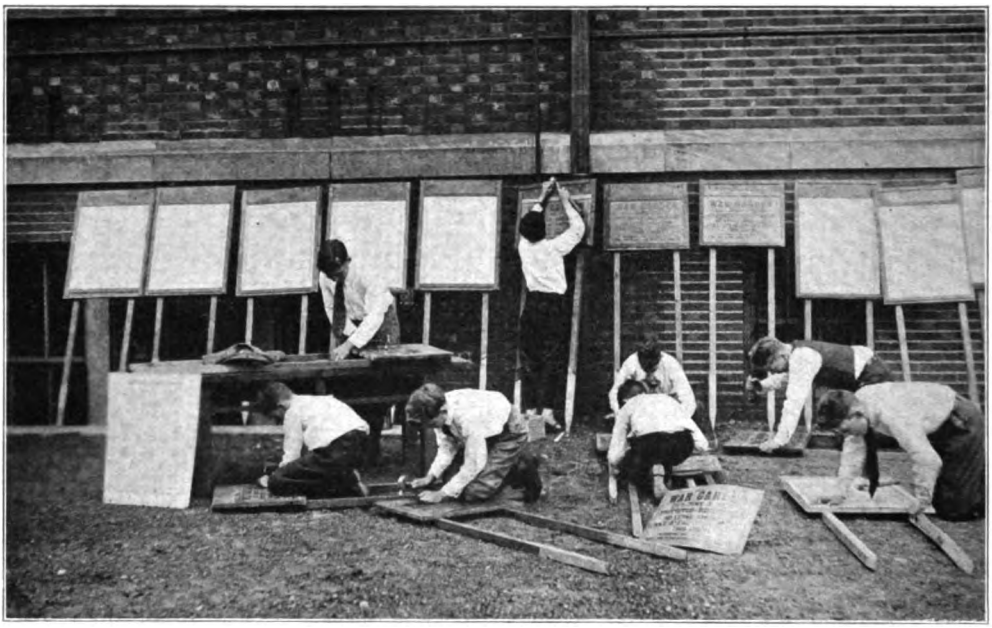

MAKING WAR GARDEN SIGNS AT THE FRANCIS W. PARKER SCHOOL.

THE above photograph shows some of the eighth grade boys of The Francis W. Parker School, Chicago, at work making war garden signs for the State Council of Defense. About thirty were made for the ward in which the school is located. The cards were of two sizes, and before mounting, the boys experimented with waterproofing them so that they would not be affected by the rain. For this purpose, hot parrafine was used and also linseed oil, both of which plans proved satisfactorily. The boards on which they were mounted were stained green, and a small panel at the top, enclosed by a narrow frame, contained the name of the school or institution for which the sign was made. The lettering was in white, with red shading, and furnished good practice in sign painting. These sign boards were made for schools, settlements, churches and for private individuals who had war gardens in the ward in which the school is located and added a great deal to the attractiveness and dignity of the gardens.

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CURRENT PUBLICATIONS

Aeroplane Construction and Assembly, by J. T. King and N. W. Leslie, instructors in the Aviation Department of Dunwoody Institute. Published by Dunwoody Institute, 1918. Size, 6x9½ in; price, $1.50.

This book was written to give aviation mechanics an essentially practical understanding of the work that they will be expected to carry out. It is also intended as a guide to aviation instructors following a course in the elementary principles of an aeroplane to its completed stage ready for flight, and covers the nomenclature, materials, structural features, the assembling and alignment of same. The book is fully illustrated, and certainly timely.

Sheet Metal Workers' Manual, by L. Broemel and J. S. Daugherty. Published by Frederick J. Drake & Co., Chicago, 1918. Size, 4½x7 in.; 552 pages and over 400 illustrations; leatherette binding; price, $2.00.

At this stage of our industrial development as a nation, a book on sheet metal working is indeed timely. And to have been written by two men whose special experience and training supplement each other so well adds greatly to the value of the book. Mr. Broemel has been associated with Peck, Stow & Wilcox Co. for many years and hence thoroly knows the subject from the standpoint of trade practice. Mr. Daugherty has had a wide experience as a teacher of metalworking, and therefore, in addition to his technical knowledge, brings to the subject the necessary knowledge of pedagogy.

The book "presents a collection of data on the construction and application of modern sheet metalworking machines and tools, describing their purposes and use with pen drawings and other illustrations in a practical and non-technical manner." A correlated course in practical sheet metal and pattern drafting is given with illustrations of actual problems, which will be helpful to teachers of this form of shopwork. One chapter is devoted to a school shop equipment. The subject of oxyacetylene welding and cutting, which is now being rapidly introduced into the schools, is also treated.

Printing for School and Shop, by Frank S. Henry, Instructor in Printing, Philadelphia Trades School. John Wiley & Sons, New York, 1917. Size, 5½x7¾ in.; price, $1.25.

To one who carefully reads the author's introduction it will be quite apparent that he appreciates the steps necessary in making a worthy printer, and therefore should be capable of writing a suitable textbook. He has kept in mind that he is addressing the student who knows nothing of the subject. At the same time the aim has been to present clearly and simply only those essentials on which both teacher and student may build. Beginning with composition and ending with ink and paper, the student acquires a wider range of knowledge than is possible under the present-day apprenticeship system.

In this day of industrial art development one is glad to note the emphasis given to the value of art feeling. The study of hand lettering and historic ornament is urged. At the close of each chapter there is a review in the form of questions.

Principles of Mechanism, by Walter H. James and M. C. Mackenzie. John Wiley & Sons, New York, 1918. Size, 5½x7¾ in., 241 pages; price, $1.50.

The distinguishing feature of this book is its presentation of the elementary principles of mechanism without going into the highly mathematical treatment of the subject. For this reason it is especially adapted for use in evening technical schools and trade schools. Typical problems are solved thruout the text, and the appendix contains 110 problems for solution.

Schools with a Perfect Score, by George W. Gerwig. The Macmillan Co., New York, 1918. Size, 5¼x7½ in.; 194 pages; price, $1.10.

Educating "all the children of all the people" under conditions that develop the head, the hand, and the heart until each shall enjoy the "life more abundant," is set forth as the educational goal of a great democracy.

Essentials of Sheet Metal Work and Pattern Drafting, by James S. Daugherty, Instructor in Sheet Metal Work, Carnegie Institute of Technology. Frederick J. Drake & Co., Chicago, 1918. Size 5x7½ in.; 181 pages with numerous illustrations; cloth binding; price $1.50.

Under the above title, Chapter V. from the "Sheet Metal Workers' Manual" has been reprinted in book form. It is a correlated course in practical sheet metal work and pattern drafting, prepared by one of the leading shop teachers of this subject who has also had years of experience in the trade. The course is outlined and the problems are presented in such sequence that the processes, and machine operations are reviewed

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with each new problem. Many of the problems are only partly solved, which compels the pupil to think as well as to draw. The author desires the work to be considered as a collection of data presenting the essentials of sheet metal work, rather than an attempt to produce a series of models.

The Francis W. Parker Schools Year Book. The Course in Science. Vol. V, July, 1918. Price, 40 cents.

The course in science in each of the eight grades of the school is presented not as a finished piece of work but as a step to better science teaching. The aim has been to seek out the problems naturally arising in the lives of the children, and make these the basis of the course of study. The emphasis thruout has been placed on the "experimental work as the chief means of securing that first-hand experience and on the actual handling of materials, which is the special contribution of science to the education of the child."

RECEIVED

Handbook of Recipes. Arranged by Faith R. Lanman, Director of Home Economics, Columbus, Ohio. Contains the recipes used in the course in home economics given in the Columbus public schools. Includes a chapter on the preservation of food by the various processes.

Prices and Cost of Living. Reprinted from the Monthly Review (June, 1918) of the Bureau of Labor Statistics, U. S. Department of Labor. A statement of comparative costs of principal articles of food on March 18, 1918 and April 18, 1918; also comparative costs in 16 selected cities for five years back. Contains much kindred information.

Statement of Policies. Bulletin No. 1. Published by Federal Board for Vocational Education. A comprehensive statement of special interest to everyone affected by the operation of the Smith-Hughes Act.

Annual Report of Sub-Department of Technical Education, Province of Nova Scotia. Prepared by Frederic H. Sexton, Director. A very important part of this report covers vocational education for disabled soldiers.

Child Labor in Warring Countries, by Anna Rochester. An address delivered at meeting of Massachusetts Child Labor Committee, Boston, January 21, 1918. Reprinted from Child Labor Bulletin, February, 1918.

Report of a Survey of the School System of St. Paul, Minnesota.

About one-third of the report is devoted to vocational training. Every wide-awake progressive citizen in St. Paul would gain much from a careful reading of the report; indeed, it contains illuminating facts of interest to other cities struggling with the problems of vocational education. For the vocational needs of St. Paul the Survey has covered the following points, among many others: Reason for vocational education in St. Paul, vocations for which St. Paul should train, how far the vocations train their own workers, how far the schools meet the vocational needs, opportunities afforded for discovering aptitudes of pupils, and consequent special preparation afforded.

Organization, Work and Method of the Red Cross Institute for Crippled and Disabled Men, by Douglas C. McMurtrie, Director. The work of the Institute covers only a year. The principal purpose of this report is to interpret the problem of the military and industrial cripple, and to indicate how some of the preliminary questions have been decided.

Reconstructing the Crippled Soldier, by Douglas C. McMurtrie. This pamphlet covers the history of this modern movement in behalf of the crippled soldier, pointing out definitely many of the problems entering into the work.

Emergency Agricultural Classes. Bulletin A, Series 1, published by the Indiana State Council of Defense. Gives the necessary steps in training city and town boys for war service on farms.

The Great Condition, by David Kinley, Professor of Economics, University of Illinois. Published by the War Committtee of the University. Points out that the great condition of peace is that Germany must be made to accept or submit to the principle that might does not make right.

The College Man and the War, by Edmund J. James, President of University of Illinois. The commencement address delivered to the Class of 1918.

Plays for Schools. Published by Extension Division of University of Kansas, Lawrence, Kansas. Lists and classifies plays requiring from five to twenty or more characters; affords a wide range of choice.

Instruction in Journalism in Institutions of Higher Education, by James Melvin Lee, director of Department of Journalism, New York University. Bulletin No. 21, 1918. Issued by the U. S. Bureau of Education, Washington, D. C. Traces history of education in journalism in this country and gives classified list of schools offering courses.

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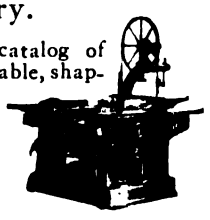

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FIELD NOTES

(*Continued from p. XI.*)

valescence is a well recognized form of therapy. To this end a little magazine has been started down at U. S. General Hospital No. 2, Ft. McHenry, Maryland, which is the product of local talent, and has been christened *The Trouble Buster*. The first issue contains a contribution written after the style of Kipling's "If," and is certainly a worthy effort.

The print shop is a 12x12 room in the loft of one of the old Fort buildings, equipped with a hand-feed press run by a ¼ h. p. motor. To print an issue of 20,000 in four days, it was necessary for the boys to set up and distribute four times. During that time 10,000 impressions were made of other work to supply the needs of the Hospital.

Major Wilson H. Henderson, formerly assistant professor of industrial education at the University of Wisconsin, is the moving spirit in this achievement.

A new development in the art of camouflage extends to the marine service, and has been styled "baffle" painting. It is a means for breaking up all accepted forms of a ship by masses of strongly contrasting colors, distorting her appearance so as to destroy the general symmetry and bulk. A school for training camouflageurs has been established by the shipping Board, under the direction of William A. Makay. Students applying for this branch of service are required to have a good elementary knowledge of line and color, and light and shade; therefore professional artists, commercial artists, and scene painters are given the preference.

A law working toward the Americanization of the foreigner became effective in New York on September 1. It provides that "Every minor who does not possess the ability to speak, read, and write the English language for the completion of the fifth grade of the public schools, shall attend some day or evening school, or some school maintained by an employer." Seventy-seven elementary schools will conduct evening classes to teach foreigners the English language and instruct them in American ideals. This work will be in addition to the regular evening school work that

(*Continued on p. XV.*)

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FIELD NOTES

(*Continued from p. XIV.*)

has been carried on heretofore. About $500,000 has been appropriated for the evening school work this season.

The International Association of Teachers of Printing has established a co-operative bureau for placing printing instructors in teaching positions. The association has its home at 444 West Fifty-seventh street, New York, N. Y., and is preparing to list all applicants for teaching positions and to receive requests from school boards and superintendents where vacancies exist. The association will charge no fee and will make no direct recommendations of applicants or positions. It will rather afford a clearing-house for bringing together the school system which is in need of a teacher and the teacher who is in need of a position.

Joseph A. Donnelly, president of the association, will be glad to answer all inquiries both concerning the work of the association and of its co-operative teachers' agency.

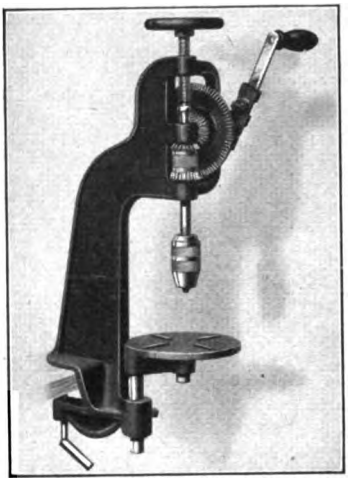
Private Benjamin Miller, a member of the first contingent of army mechanics trained at the William L. Dickinson High School barracks in Jersey City, N. J., has won distinction. He composed and wrote the camp's official song entitled "The Fighting Mechanics," and it has reached the ears of the authorities at Washington. They have requested a copy of it with a view to distributing copies thruout all the mechanical training schools in the country.

The demand for automobile mechanics in Buffalo, N. Y., has caused the board of education to increase the facilities for this work at the vocational schools. In addition to caring for larger classes, they are now prepared to give more advanced work than heretofore.

The Massachusetts State Board of Education has planned to conduct an evening class at the Lowell Industrial School for the purpose of training mechanics to become instructors. The class will be conducted two evenings a week, beginning early in October.

Two hundred men between the ages of 18 and

(*Continued on p. XVI.*)



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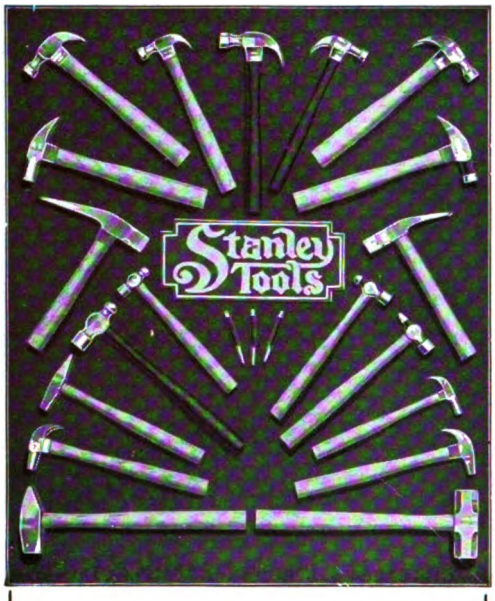

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FIELD NOTES

(*Continued from p. XV.*)

45 years have enrolled in the emergency vocation classes in Tacoma, Washington, which are being conducted in Central grammar school and Lincoln high school under the direction of the War Department, the Federal Board for Vocational Education and the Tacoma school board. This number is twice as large as those in charge expected.

One of the most interesting features of the Red Cross exhibit at the California State Fair, August 21 to September 8, was the toys manufactured by the school children of Los Angeles. The Junior Red Cross is planning to supply a part of the toy market of the United States for Christmas this year. How well they can do it was shown by this exhibit. The exhibit was taken in its entirety to the Nevada State Fair for the week following.

The colored farmers in Virginia are beginning to see daylight in their upward struggle from poverty and ignorance. John B. Pierce, District Negro Agent in charge of Negro farm demonstration work, reports that in a single year over 4,400 colored farmers, with whom the Virginia county agents conducted demonstration work, raised practically all their home supplies; 969 opened new bank accounts; and 1,233 increased their bank deposits.

A recent survey of the salaries paid rural school teachers in Massachusetts, revealed that the average weekly wage is only $10.50. It is not to be wondered at that so few normal students are willing to prepare for rural-school work. The problem calls for characteristic American promptness of action.

To meet the present shortage of teachers that has come as a result of the war, Dr. P. P. Claxton, U. S. Commissioner of Education, has suggested to school officials that an effort be made to induce former teachers of marked ability to return to the ranks for the period of the war, at least. Many of these are women who have married, and although the school regulations in many places prohibit married women from teaching, Dr. Claxton recommends that this be waived

(*Continued on p. XVII.*)

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FIELD NOTES

(*Continued from p. XVI.*)

for the present and an appeal be made to them on the basis of patriotic service.

John W. Hoyer, formerly supervisor of manual arts in Bloomington, Ill., has accepted a position as director of the Industrial Arts Department of the Northern Normal and Industrial School at Aberdeen, South Dakota. Mr. Hoyer received his B. S. degree at Bradley Institute in 1916, where he completed the course for teachers of manual arts. Before entering the teaching profession, Mr. Hoyer was a graduate of a school of pharmacy with several years of experience as a druggist. He began his teaching in Washington, Iowa. Later he taught in the Manual Training High School of Indianapolis.

Thomas W. Johnston, who has been teaching woodworking in the elementary and evening high schools of St. Louis, has accepted a position in the Duluth high school. He will have charge of the woodworking department, which is organized on a factory production basis. The furniture will be used to meet the needs of the school system, or be sold, as seems desirable. Mr. Johnston is a graduate of Bradley Polytechnic Institute and Teachers College, Columbia University, and has taken courses in architecture at Washington University, St. Louis. The past summer he took advanced work at the University of Wisconsin.

Professor William Noyes, director of vocational education in Duluth, Minnesota, is at present working with the Federal Board for Vocational Education in connection with the vocational rehabilitation of disabled soldiers.

Thomas F. Fisher, principal of the vocational school in Lowell, Mass., is training instructors of ship builders at the McDougall-Duluth shipyards in Duluth, Minn. Instructors will be trained at this center for all the shipyards in that section of the country.

Harry E. Milliken, who has been head of the printing department of the vocational school at Holyoke, Mass., has accepted a similar position at the Worcester Trade School.

(*Continued on p. XVIII.*)

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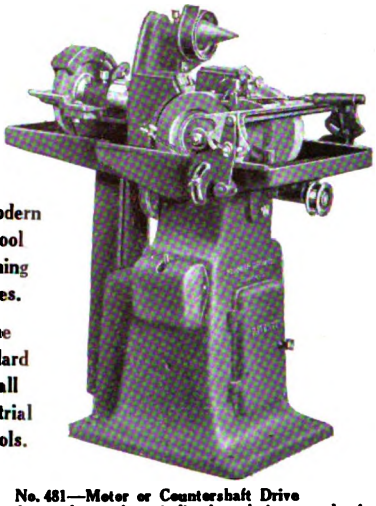

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FIELD NOTES

(*Continued from p. XVII.*)

Samuel McAuley, of Westfield, Mass., has been appointed instructor in pattern making and blueprint reading at the Holyoke Vocational School.

A junior high school was opened in September at Cedar Falls, Iowa. The quarters of the new school are in the building with Teachers College, where the senior high school also is located.

Another Iowa city to adopt the junior high school plan is Des Moines. The school has been made possible thru the Federal aid afforded by the operation of the Smith-Hughes Bill.

The next annual convention of the National Society for Vocational Education will be held in St. Louis, Mo., February 20-22, 1919. The next annual meeting of the Department of Superintendence of the National Education Association will be held in Chicago the following week. This will enable members of both organizations to attend both meetings. The year's work of the Society will be planned with St. Louis as the goal.

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PROBLEMS IN WOOD-TURNING—Crawshaw. A textbook on the science and art of wood-turning. Contains 25 full-page plates of working drawings covering spindle, faceplate, and chuck turning. It gives the mathematical basis for the cuts used in turning. **50 cts.**

ESSENTIALS OF WOODWORKING—Griffith. The standard textbook on elementary woodworking. A clear and comprehensive treatment of woodworking tools, materials, and processes. May be used with any course of projects. - - - **75 cts.**

PROBLEMS IN FARM WOODWORKING—Blackburn. A book of working drawings of 100 practical problems relating to agriculture and farm life. There are 60 full-page plates of working drawings, each accompanied by a page or more of text treating of "Purpose," "Material," "Bill of Stock," "Tools," "Directions" and "Assembly." - **$1.00**

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ONE KILLS the Hun, the other kills his hope. And to kill his hope of victory is as essential right now as to kill his fighting hordes. For while hope lasts, the Wolf of Prussia will force his subject soldiers to the fighting line.

We have floated other loans, built a great fleet of ships, sunk pirate submarines, sent our men across and shown the Kaiser's generals what American dash and grit and initiative can do. The Hun has felt the sting of our bullets and the thrust of our bayonets. He is beginning to understand America Aroused--to dread the weight of our arms and energy.

This is a crucial moment. Nothing can so smother the Hun morale, so blast his hopes, as a further message from a hundred million Freemen, a message that says in tones that cannot be misunderstood,"Our lives, our dollars, our ALL---these are in the fight for that Liberty which was made sacred by the sacrifices of our forefathers."

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TRADE NOTES

A beautifully printed and substantially bound catalog is the 1918 edition issued by Henry Disston & Sons, Philadelphia. The value of the very complete information concerning every tool which they manufacture is further enhanced by the attractive makeup. One always thinks of this firm as a manufacturer of saws, but this catalog shows that they also make plastering trowels, brick trowels, pointing trowels, cane knives, machetes, hedge knives, corn knives, post-hole diggers, ditch bank blades, bevels, try squares, gauges, screw-drivers, levels and burnishers.

We have received from E. C. Schiele, of the Disston Educational Department, a very comprehensive list of "industrial printed matter of educational value." It is a selected alphabetical list of catalogs, booklets and pamphlets sent out by the manufacturers of America. It contains more than ten mimeographed pages.

An important improvement of the Starrett Speed Indicators is the use of rubber tips which are added to the hardened steel pointed spindle for both pointed and centered shafts. These not only remove the jar and run smoothly, but produce a stronger frictional contact between the shaft and the instrument. A descriptive circular will be sent on request.

The increasing interest in school printing gives added value to every new book on the subject. Guy M. Jones Company, Indianapolis, are announcing a new book entitled "Vocational Printing," by Ralph W. Polk. It is a very thoro treatment of the subject, especially designed for junior and senior high schools, and all-day and part-time vocational schools. It is cloth bound, 250 pages, and 170 illustrations; price, $1.25.

The demand for manual training teachers is greater in excess of the supply, and will continue to be until after the war. The Specialists Educational Bureau, St. Louis, had several high-salaried positions open at the beginning of the school year, and are already seeking teachers for January and February openings.

If any of the readers of this magazine are not familiar with the spring bolt top construction of the Kewaunee line of shop equipment, they should send for the Kewaunee Book. Address, Kewaunee Manufacturing Company, Kewaunee, Wis.

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O dearest country of my heart, home of the high desire,
Make clean thy soul for sacrifice on Freedom's altar-fire:
For thou must suffer, thou must fight, until the war-lords cease,
And all the peoples lift their heads in liberty and peace.

—Henry Van Dyke.

HONOR ROLL

George Gordon Keller, formerly teacher of manual training at Oak Park, Illinois, was killed at Kelly Aviation Field, San Antonio, Texas, on July 29, when his airplane collided with that of another cadet. Mr. Keller's home was at Peoria, Illinois, where he graduated at Bradley Polytechnic Institute in 1910. While teaching at Oak Park, he took up the study of architecture and soon became connected with an achitectural firm in Boston, Massachusetts, at the same time continuing his studies. When he enlisted in the service of his country about nine months ago, he was president of the Boston Architectural Club. Mr. Keller was a young man of great promise.

(Note:—As the casualty lists grow the number of manual arts teachers entitled to a place on the roll of honor will increase. We shall appreciate the cooperation of our readers in furnishing us full information of these, together with names of those entering the service.)

MANUAL ARTS TEACHERS IN THE ARMY AND NAVY

Cleveland, Ohio:

Amandus L. Jordan, Company F, 331 Infantry, Camp Sherman, Ohio.

Memphis, Tennessee:

George W. Cleaveland, 12th Engineers, Camouflage Section, "somewhere in France."

Rochester, Minnesota:

George E. Chandler, Selfridge Field, Mt. Clemens, Michigan.

East Cleveland, Ohio:

John H. Thompson, Barracks No. 54, Kelly Field No. 2, San Antonio, Texas.

Washington, Iowa:

Wilbur J. Knupp, Aero Division, University Heights, New York.

Brodhead, Wisconsin:

Harry V. Jones, 160th Aero Squadron, Parkfield, Memphis, Tenn.

Denton, Maryland:

Frank J. Ring, Fort Tilden, U. S. N. Air Station, Long Island, N. Y.

Woodhull, Illinois:

Charles H. Shoemaker, Naval Radio School, Harvard University, Cambridge, Mass.

Metamora, Illinois:

Clifford L. Stivers, Naval Training School, Harvard University, Cambridge, Mass.

Springfield, Illinois:

Christian Bockelbrink, Detached Motor Section, Ordnance Department, Washington, D. C.

Metcalf, Arizona:

Harry L. House, Camp Cody, Deming, New Mexico.

Hartford, Wisconsin:

H. E. Jackson, U. S. N. on Pacific Coast.

Buffalo, New York:

Bob Woellner, Psychological Board, Camp Funston, Kansas.

Pontiac, Illinois:

Harold A. Huntington, Coast Artillery, Montana.

Lynn, Massachusetts:

Robert W. Watts, 7th Regiment, F. A. R. D., Camp Jackson, Columbia, S. C.; F. Stanley James, Naval Aviation School, Massachusetts Institute of Technology, Cambridge, Mass.; Earl F. N. Emerson, 108 Ordnance Depot, Camp Devens, Ayer, Mass.

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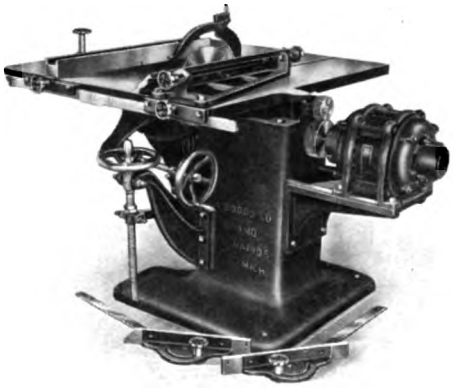

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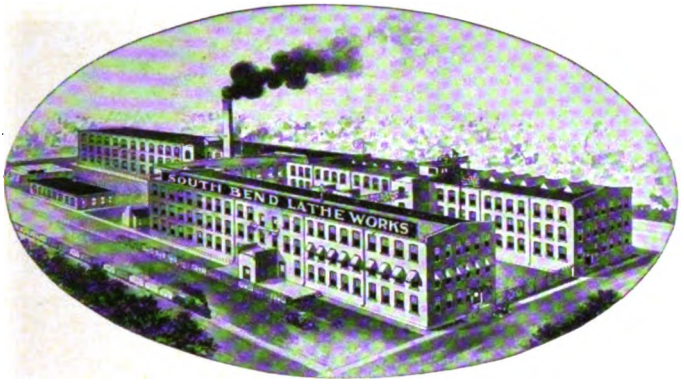

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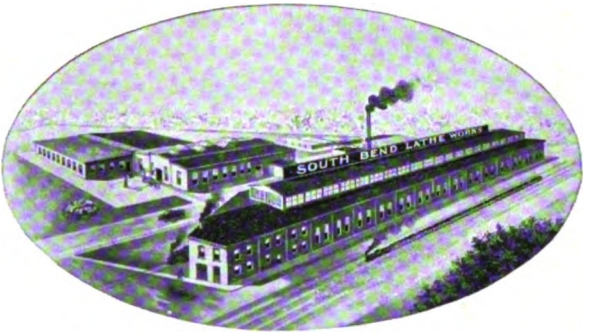

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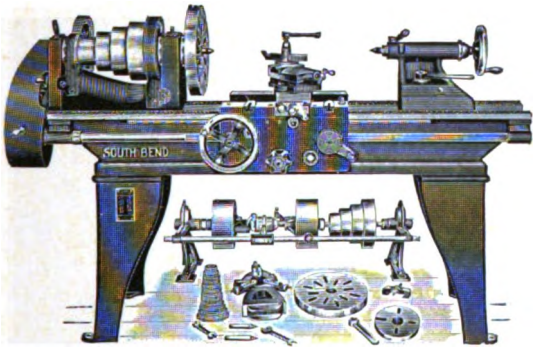

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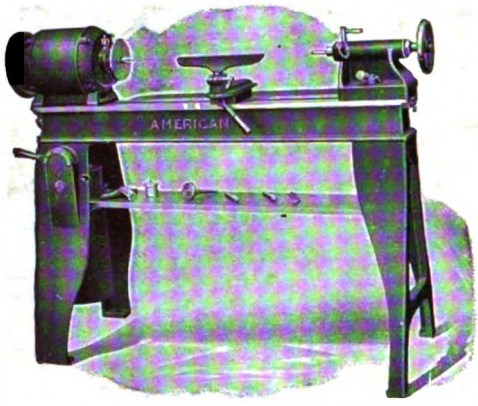

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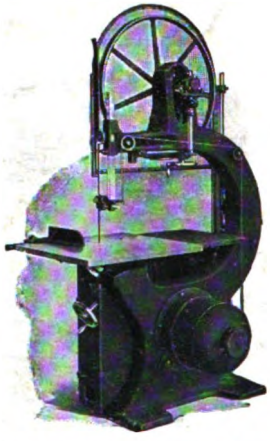

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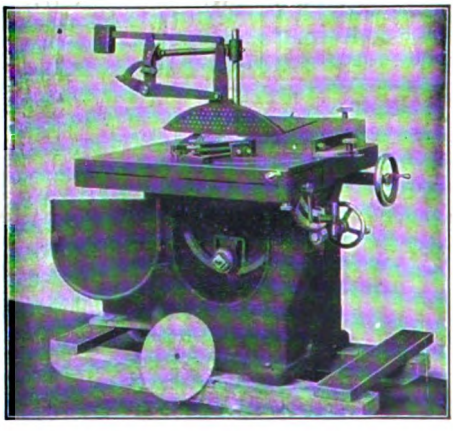

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Vol. XX NOVEMBER, 1918 No. 3

MANUAL TRAINING MAGAZINE

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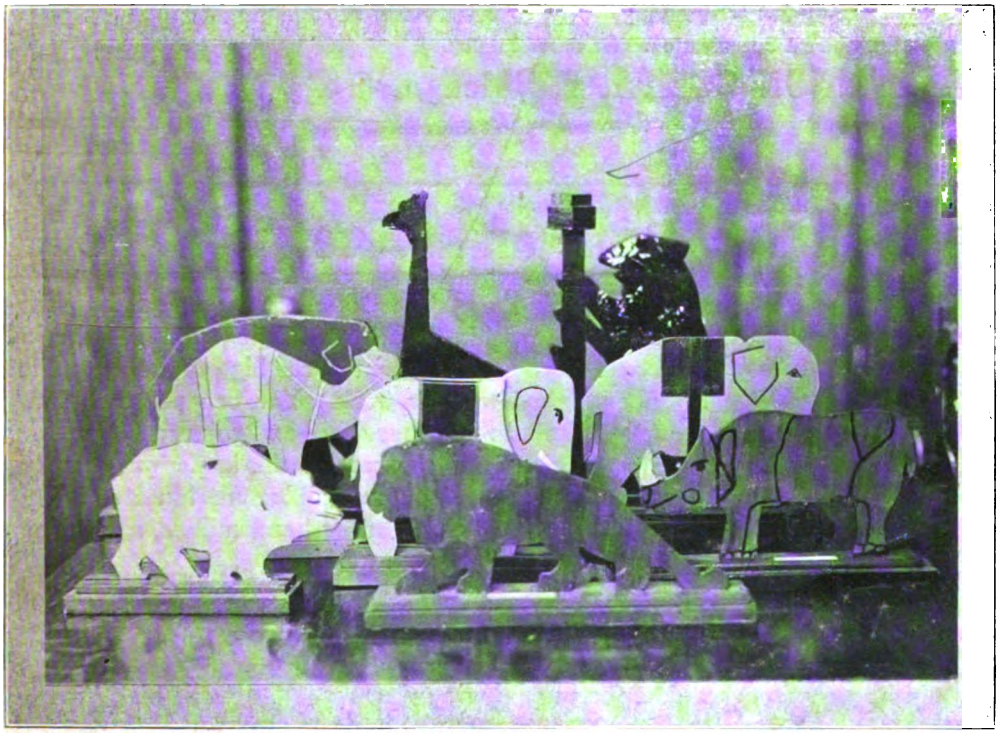

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Toys made in Public Schools, Los Angeles, California

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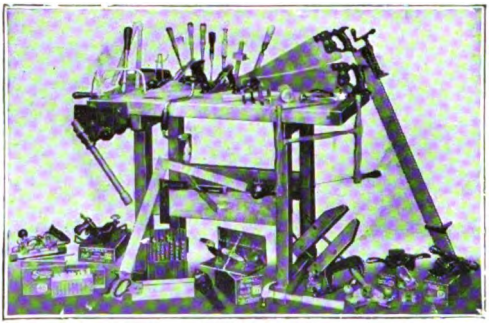

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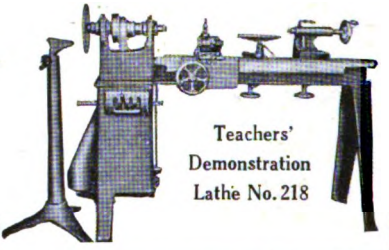

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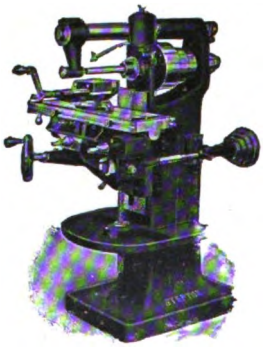

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very often by the purchase of tools not adapted to the work. You would not think of putting a 32 in. lathe in your school room on account of the high first cost, and it is not adapted to your work. You can put two 16 in. lathes or more in the same space and you can buy two or three machines for the cost of the larger one. Apply that same principle to your milling machines and buy **STEPTOE** small power feed or hand millers, a machine especially adapted to school room work.

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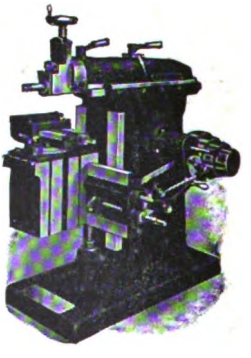

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This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.

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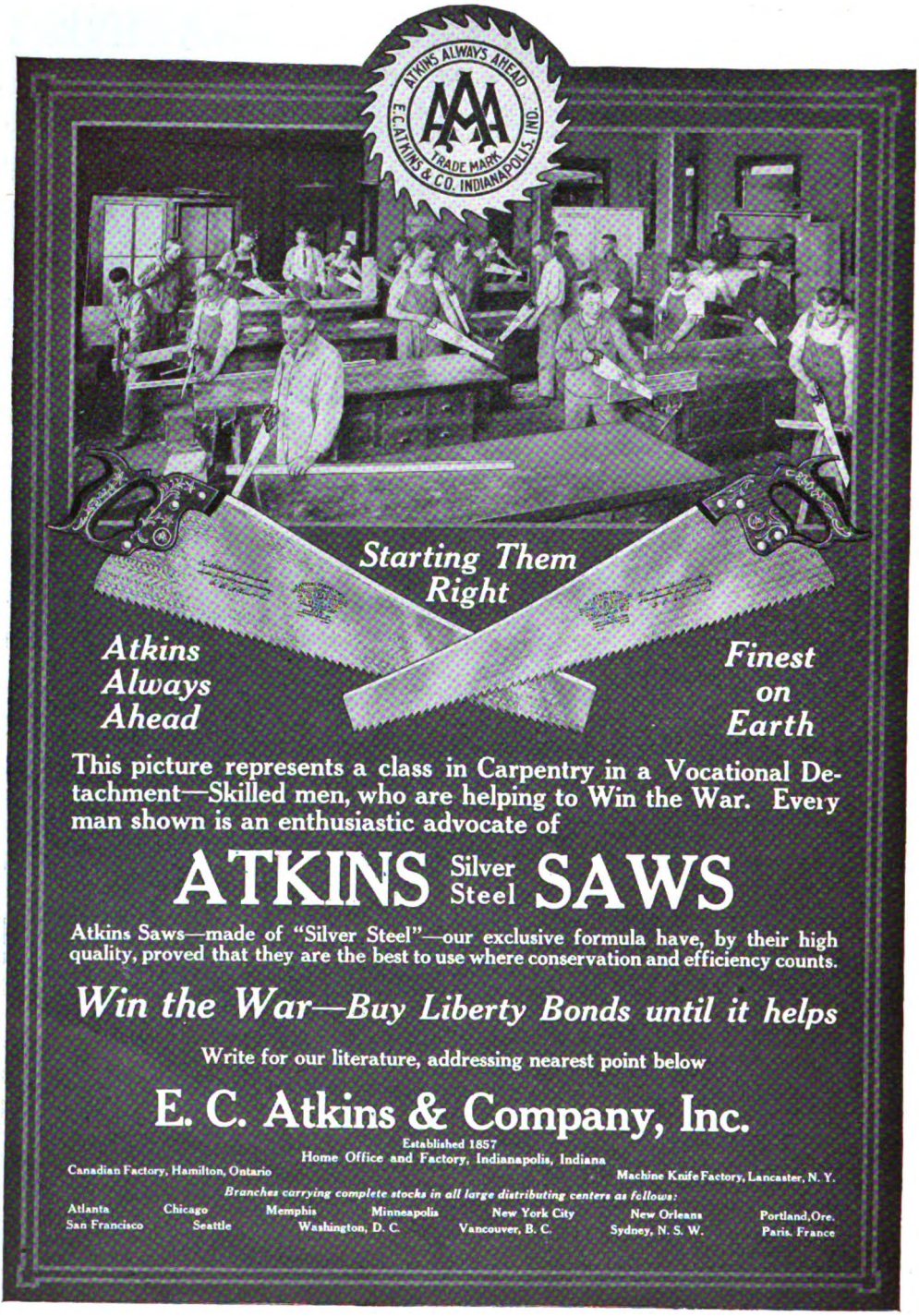

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FIELD NOTES

THE University of Illinois in cooperation with the Chicago Board of Education, under the supervision of both State and Federal Boards for Vocational Education, is conducting an evening school in the city of Chicago which is designed to train experienced machinists to teach their trade to apprentices. The curriculum is planned to cover three evenings a week, two hours each, for forty weeks. The subjects cover trade drawing, trade mathematics, trade analysis, trade science, trade English, industrial resources, observation and methods, industrial history and citizenship, sanitation and safety, and practice teaching. This work is under the supervision of Professor Ira S. Griffith, of the University of Missouri.

AROUND NEW YORK

THERE is a movement among the prominent educators in the New York school system to supply pupils with occupational information and to guide them to the work for which they are best fitted. Superintendent Ettinger has recommended that an item of $21,450 be included in the estimate for the budget for the establishment of a bureau with five district branches which shall act as a clearing house for vocational guidance and shall coordinate and cooperate with all agencies at present engaged in this work.

At the present time there are a number of private agencies in New York City that have undertaken to help pupils find the work for which they are best fitted, and in addition a large number of the public schools are rendering service for their pupils in placing them in good positions. This work is now being done without charge to the city, the principals and teachers doing it voluntarily as an added service. Among the private agencies doing this vocational guidance in this city are the following: Thirteenth District Vocational Council, The Vocational Bureau of the Henry Street Settlement, Committee on Vocational Guidance of the United Hebrew Charities of the Bronx, Vocational Committee of the Kips Boy Neighborhood Association, the Vocational Placement Bureau of the State Employment Bureau, Alumni Association of P. S. 40, and The Peoples Institute.

The proposed plan for New York City now is to have a district counsellor and field worker and clerical help in each center and all would be under the general direction of a vocational counsellor for each of the five districts who in turn would be under a general director.

Over 1200 women studied this summer at the War Service Training School conducted by the Department of Education at the Washington Irving High School. The courses offered were accounting, stenography and typewriting, filing and office practice, speed stenography and nursing. The object of the board of education in offering these courses is to prepare educated women to fill government positions.

Mayor Hylan, of New York City, has appealed to the War Industries Board to permit the city of New York to build school houses during the war. The Mayor asserted new schools are necessary and that sufficient material should be released to construct the needed schools.

The State Commissioner of Education of New York has notified Frank D. Rexford, head of the division of farm labor of the board of education of New York City, that school boys may remain at work as farmers' helpers until Oct. 15. Circulars have been issued urging the schools to help the boys who stay out by organizing coaching classes and other devices to enable them to make their work up on the return to school.

Superintendent Weet, of the Rochester schools, has already instructed the farm cadets of that city to remain on the farm six weeks more to help the farmers harvest their crops. He has made arrangements whereby upon their return they will be given every possible help from their teachers in making up their work. Mr. Rexford expressed the hope recently that all cities would come forward and do the same thing for the boys.

The experience of the last two summers in sending boys out to work on the farms in New York State has proved of great value. It is proposed that a more thoro organization be made and that boys who do farm work be

(*Continued on p. VI.*)

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grouped into special classes under the direction of teachers who have been out with them. In this way it is possible to release the entire class in the spring without disrupting the organization of the school.

An addition has been made to P. S. 45, which was the Garyized school on 189th St. Bronx, New York City. It will provide a swimming pool, foundry, pottery, machine shop, printing shop, pattern and cabinet making shop, cooking room combined with lunch kitchen and lunch room and homemaking room, sewing room, gymnasium, science room, music room and seven class rooms. Thus there will be additional accommodation for 578 pupils.

A course in shipbuilding and marine transportation has been established by Lehigh University, South Bethlehem, Pa. This course will be a combination of engineering and economics, preceded by the usual fundamental subjects common to engineering courses, namely, mathematics, chemistry, modern languages and physics. The course will require three years for completion. The third year will include naval architecture, modern engineering, and foreign commerce. Physical exercises and military drill are required thruout the three years.

THE MANHATTAN TRADE SCHOOL'S NEW BUILDING

The city of New York has recently built a splendid building to house the Manhattan Trade School. When the new building is completely equipped and running at full capacity it will be able to accommodate 1200 girls in the day school and a night school of two sets of students a week, 1000 in each, on alternate nights. Altogether between 2000 and 2500 women will be able to take advantage of this opportunity for trade training.

While it is true that this school does not prepare directly for the so-called war occupations, it does train girls for the essential trades which are fast losing women to go into munitions factories. One of the principal trades taught at this school is machine operating. The demands are so great that the school could place every trained worker ten times over at $15 per week to begin on.

The greatest area in this new building will be devoted to the trades for which the demands are greatest. Among these are the needle trades, especially machine operating and flower and feather making. This last trade is a growing one due to the war. The reason for this is that formerly a large part of these goods were imported, and since the importation has stopped, it is necessary to carry on this work in this country. The same thing applies to glove making.

While the school has up to this year offered one-year courses, there has been added a two-year course. In addition a number of short unit courses will be offered to older women and those already engaged in the trades. In this way it is possible for girls to learn new trades during off seasons.

The school has entered into cooperation with the Federal Bureau to give exceedingly short unit courses for women who are totally unfamiliar with power machines. In this manner it is possible in a day or two to familiarize the women in a mild form with the noise and complicated workings of the power machines.

This school has always made a special effort to look after the health of the girls and women. The new building has a fine roof garden, spacious gymnasium and shower baths for the recreation and health of the girls. On the ninth floor a school lunch is conducted by the girls and on the ground floor a cafeteria and tea room open to the public as well as a draping and show window of the work of the pupils.

Every girl in the school undergoes a thoro physical examination and during the course care is taken to remedy any defect and hold up her general health. There is a summer home connected with the school where each girl spends six weeks during the spring and summer to give her outdoor life.

—W. H. Dooley.

MINNESOTA NOTES

SUPERINTENDENT B. B. JACKSON, of the Minneapolis schools, announces that Provost General Growder has notified the board of education that all industrial teachers are considered engaged in essential industry. J. E. Painter was authorized to list all the men

(*Continued on p. VIII.*)

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The Finish Is Important!

SURELY this is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

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and make application to their individual draft boards for deferred classification.

Dunwoody Institute has been designated as one of three aviation ground training schools for student flight officers. Boston Tech was the first and largest; the University of Washington, Seattle, the second; and Dunwoody the third.

The first of July, Dunwoody established a course for Machinists' Mates General of the Navy. Three hundred and forty men started in an eight months' course organized as follows: Five months at Dunwoody, two months at the University of Minnesota, and one month in a local machine shop, working on productive work. The class was divided into sections so as to rotate. At Dunwoody the men spend half time in machine shop practice and half time in related subjects in the lecture and recitation room; the fifth month they take up the allied subjects of blacksmithing, sheet metal work and oxy-acetylene welding; at the University they spend one week in lecture work and demonstrations of foundry and pattern work, and seven weeks in steam engineering including practical work with steam auxiliary work and boilers and ice refrigerating plants. At the commercial shop, two weeks are spent on at least two standard machines and two weeks on assembly and bench work. The class at present is working on war work, making French gun carriages.

Dunwoody is carrying on all its regular civilian work—day school, part-time and night school, extension and dull-season work.

Mr. Craigo, formerly principal of the day school, is now assistant director. Mr. Quickstad, formerly principal of the junior high at Virginia and later instructor in sheet metal work at Dunwoody, is now the principal of the day school.

Lieutenant Leslie, a flier with the British air forces, is now the head of the aviation department, replacing Captain Farrow, who returned to Canada. There are now in the aviation department four Canadian fliers who have seen overseas service, two Canadian mechanics, three ensigns of the U. S. Navy, aviation service, and two Chief Petty Officers of the U. S. Navy mechanics.

The radio department has been made a separate department with M. E. Todd in charge. Two hundred and fifty students are enrolled.

Assistant Superintendent John N. Greer, of Minneapolis, has organized the freehand drawing department of the public schools on a new basis. The instruction will be from the standpoint of design, the aim being to produce consumers not producers. Pupils will be taught to design not to copy. The sources of material for the course will fall into at least eight sections: color design, commercial design, costume design, interior decoration, household design, constructive design, object drawing and nature design. This course will be made the basis of all the work of the industrial department of the Minneapolis schools.

C. A. Zuppann, director of the technical department of Central High School, Minneapolis, was recently called to Washington to attend a conference on vocational rehabilitation under the Smith-Sears act. This bill established a separate division under the Federal Board for Vocational Education. Mr. Zuppann was appointed a special agent for the Federal Board, with headquarters in Washington. He has taken six months leave of absence from his duties here. It is expected that Mr. Zuppann will be stationed in the Twin Cities and that he will be able to give any needed assistance to the technical work in the Central High School.

George M. Brace, formerly teacher of mechanical drawing at Central High, St. Paul, is now supervisor of manual training in that city. The industrial departments of both high schools and grades have been placed under his supervision. Mr. Brace states that there are to be no sweeping changes in the department, but that they will be governed by the demands of the Federal authorities. It is expected that a demand for trade and industrial training will be in evidence. To meet this demand there has been added to the St. Paul industrial school, two departments, one in sheet metal work and one in printing. The high schools will be made to conform to whatever call may come. Evening vocational courses will be carried on as usual. The enrollment has just begun and by the first of October will be well started.

—J. L. PEMBERTON.

(*Continued on p. X.*)

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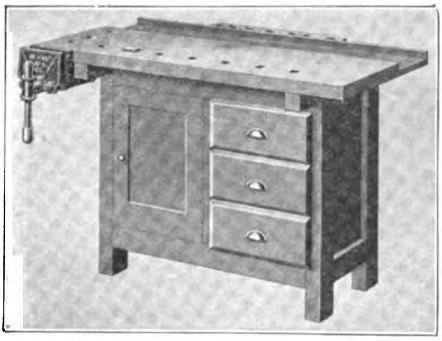
"WITHOUT QUALIFICATION"



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A. C. Smith, Principal of the Joint Union High School, Riverdale, Cal., wrote as follows: Without qualification, I would pronounce your products the finest human genius and skill has yet produced. I heartily appreciate your effort to co-ordinate your labors with ours in the school room, in an endeavor to raise the standards of cleanliness, economy of time, and efficiency among our young people. It would be difficult for me to suggest a real improvement upon your laboratory furniture.

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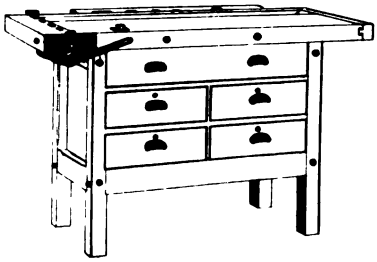

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FIELD NOTES—(*Continued from p. VIII.*)

FROM THE NORTHWEST

The Seattle Manual Arts Club held its first meeting October 3. The feature of the program was a talk by John Cairnduff, a discharged Canadian soldier who is now employed by the Seattle school board as an elementary benchwork teacher. Mr. Cairnduff enlisted in the first year of the war, was placed in the front line trenches in Flanders in the spring of 1915, went over the top and was wounded in the hip. He lay four days in the mud of No-Man's-Land and then was picked up by the Germans. He submitted to four operations, two without the use of anesthetics. He was exchanged as a war prisoner and returned to Canada. Being an expert wood worker he was given a course in Montreal to fit him to teach manual training and is now a member of the Seattle teaching force. The Seattle board has a ruling that only Americans shall teach in the city schools, but it wisely made an exception in the case of Mr. Cairnduff.

Superintendent McCullough, of the Ellensburg city school system, is one of the Washington superintendents who has grasped the true meaning of vocational education under the Smith-Hughes Act. He has already in operation several part-time classes which are doing excellent work and more are to be provided. Fourteen pupils of the high school are taking an automobile course. They spend three hours daily in the school studying history, English and applied science. The afternoons and Saturdays are spent in a local garage where the boys are paid twenty-five cents an hour for their time. Four boys in a machine course get their practical training in the Northern Pacific machine shops. This work is supervised by V. Hall. In addition to the Smith-Hughes work Mr. McCullough has an excellent farm mechanics course in operation where twelve boys are working in cement, forging, and gas engines as they apply to farm problems.

The Manual Arts section of the Washington Educational Association will meet in Seattle on October 24th and 25th.

—E. G. ANDERSON.

ANNUAL MEETING OF VOCATIONAL EDUCATION ASSOCIATION OF MIDDLE WEST

The Vocational Education Association of the Middle West will hold its fifth annual convention at the Congress Hotel, Chicago, January 16, 17 and 18, 1919. Following the high standard established by previous meetings of the association, this convention may well be expected to contribute materially to the solution of problems which are confronting this field of education in war times. The selection of Chicago for the fifth time, because of its central location in the Middle West, assures a good attendance from all the adjacent territory. The attendance at the last convention showed a great percentage of membership registered from all the states of the Mississippi valley. The program committee has already arranged a tentative program which promises to be a very vital one at this particular crisis in our educational progress.

The proceedings of past meetings of the Association form a valuable contribution to the literature on vocational education and include papers and discussions by leaders in the work from all parts of the country. A few copies of some of the proceedings are still available. They include valuable reference material for students of vocational education. The proceedings of the 1916 and 1917 meetings may be had at 25 cents each, postpaid, and a timely address by Dr. John Dewey on "Vocational Education in the Light of the World War" is ten cents. Send requests to the secretary, Leonard W. Wahlstrom, 330 Webster Ave., Chicago.

MINNESOTA EDUCATIONAL ASSOCIATION MEETING

The annual meeting of the Minnesota Educational Association will be held in St. Paul from November 6 to 9. The following topics will be discussed in the Industrial, Household Arts and Manual Training Division:

THURSDAY AFTERNOON, NOVEMBER 7, 2:00 P. M.

General Topic—The Industrial Department of the Public Schools and the War.

(*Continued on p. XIV.*)

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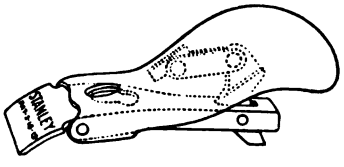

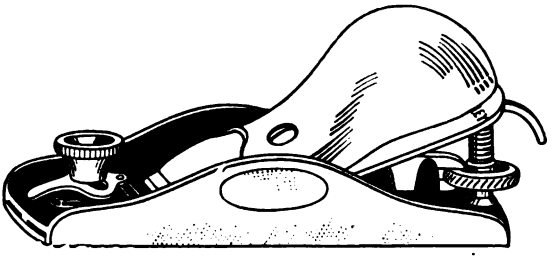

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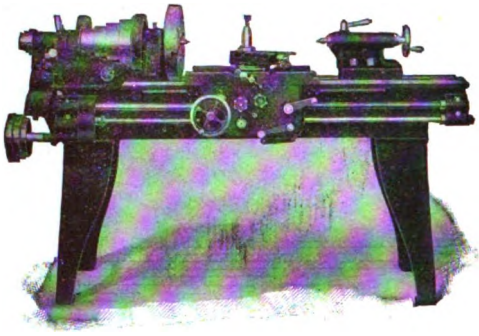

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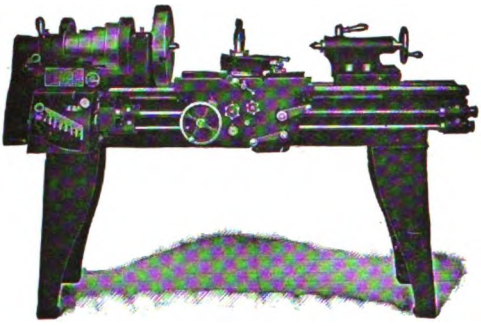

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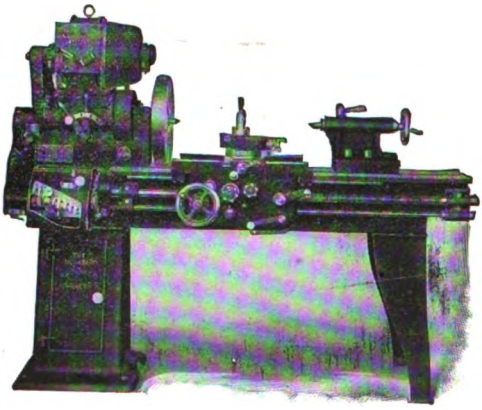

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VOLUME XX No. 3

MANUAL TRAINING MAGAZINE

NOVEMBER, 1918

INDUSTRIAL WORK IN ENGLISH ELEMENTARY SCHOOLS

WILLIAM BRADBURN

Head Master of Municipal School, Old Hall Drive, Groton, Manchester, England

AT the present time when "Handwork" occupies so large a space in the work of many schools, it may be thought that this form of educational activity is of modern and comparatively recent origin. That idea is not altogether true, and this series of articles is designed to present a brief historical account of "Handwork" as it existed in English Schools prior to its modern adoption and development. The belief in this method of drawing out the faculties of children and young persons assuredly took shape and fashion after the publication of the results of several Governmental enquiries, between 1886-1891, into our educational methods, especially those relating to higher education. These emphasised the necessity, which had been fully apparent to many educationalists for many years for a thoro overhauling of and an improvement in our educational facilities and machinery.

Even for those who would never receive any further instruction than that provided by the elementary school it came to be realized that the training afforded by "Handwork" and by the "learn by doing" method, not merely appealed to the child's natural activities and enlisted his sympathies, but also tended so to quicken and enlarge his faculties as well as his resourcefulness, as to render him a more useful and a more fully developed citizen. But even during the 18th Century, many of those interested in English education felt that handwork should form a very considerable portion of each day's work in school. True, they possessed a somewhat different basis for their ideals. They even had a different name, for they called it "Industry" not "Handwork." The thought of some was to train children for particular industries, and to use the school as the adjunct of industry.

Among the women advocates, the production of reliable and well-trained servant girls was largely predominant, and in consequence, in schools for girls domestic work occupied a very prominent place. At the same time there were many who saw in "Industrial Work" a means by which the faculties of children might be more fully developed than by a rigid adherence to book learning.

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I. THE CHARITY SCHOOLS OF THE 18th CENTURY

It is to be borne in mind that previous to 1833, in which year grants from the Treasury were first made for the assistance of English elementary education, all the efforts to educate the poorer classes of children eminated from charitable organizations.

In the beginning of the 18th Century, greater interest began to be manifested in the education of the children of the lower classes and, during that period "The Parochial Charity School Movement," "The Circulating School Movement," and "The Sunday School Movement," had their origin, and, according to Birchenough in his *History of Elementary Education,* by the middle of that century some 30,000 children were being taught thru these organizations.

These Charity Schools gave little in the way of real education. Religious instruction and the merest rudiments in reading and writing was all that was attempted.

Every one, however, had its "Industry," and of schools without that feature there were none; hence many of them came to be called "Schools of Industry."

The economic conditions of the time, especially during the latter part of the 17th and the earlier part of the 18th Centuries made it a necessity for the children of the poor to contribute to the family exchequer at the earliest possible moment. The "School of Industry," therefore owed some of its success to the fact that it was possible for the child to earn as much from its labor at the school as from its work on the farm, the greater number of them being situated in rural or semi-rural districts, whilst gardening, and its attendant industries was the subject most generally taught. As a rule, too, the profits arising from the farm or garden were divided amongst the children.

THE MAIN CHARACTERISTICS OF THE 18TH CENTURY SCHOOLS OF INDUSTRY

The 18th Century Schools of Industry were characterised by two main features: One, the meagre amount of the intellectual instruction provided; the other the provision of a certain amount of industrial work.

The poverty of the intellectual side of these schools may be judged from the fact that only the merest rudiments of reading, writing and arithmetic were attempted. The inculcation of religion being the chief object of the school's existence, reading was confined to the New Testament as a textbook, and in regard to the girls, was, in many instances the only purely mental education they received, writing and arithmetic being reserved almost exclusively for boys. Both writing and arithmetic were confined to exercises on slates, paper never being used. The children were taught nothing more in writing than to write their own names and to copy three or four lines transcribed upon the blackboard. The exercises in arithmetic seldom proceeded further than the four simple rules, together with easy examples in addition and subtraction in the monetary notation.

In a few schools so subordinate was the intellectual work to the industrial that even reading ceased to be taught—a sort of preferential admission being given to those who were able to read a chapter in the New Testament. Such was the case at the Boldre School (New Forest) founded in 1791 by the Rev. Mr. Gilpin. The accommodation was limited to twenty boys and twenty girls, selected from the laboring population of the parish, and children unable to read were admitted only when those who could do so had been found places. This arrangement, strange to say, was supposed to encourage reading.

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THE KENDAL SCHOOL

This school was a typical School of Industry. There were usually one hundred and twelve children in attendance. The intellectual work was limited to reading and writing in the acquirement of which the children devoted one hour per day. For the purposes of these studies the children were divided into classes and taken a class at a time into a separate room. The master was a youth of eighteen who was paid half-a-guinea per week. He was assisted by a boy of fourteen who acted as usher and received eighteen pence per week for his services.

The little importance attached to intellectual instruction is well illustrated by Sir Thomas Bernard, who, in the report of these schools published in the education reports of "The Society for Bettering the Condition of the Poor," says of these teachers of the Kendal Schools: "These two, with the assistance of the upper and more intelligent boys, supply all the requisite instruction for these industry schools, where one hundred and twelve children are educated and fitted for a useful life."

In some of the schools the intellectual teaching appears to have been limited entirely to reading. This was the case at the Lewisham School, whilst at the Fincham School, eight only, out of the sixty-four children in attendance were, in 1809, being taught to write.

Some of the schools were established for the education of girls only. Such were those at Bamburgh, Northumberland, the Cheltenham Schools, Gloucestershire, and the Mendip Schools at Cheddar.

INDUSTRIAL OCCUPATION FOR BOYS

In the rural districts the boys were employed chiefly on the land—weeding, picking stones, etc., whilst in the towns various occupations were taken up, such as shoemaking, pin-pricking, straw-plaiting, etc.

At the Kendal Schools the children were taught shoe-making, and it is stated that some of the boys at the end of eighteen months' tuition were able to make shoes completely with the exception of finishing them with the knife, the last and most difficult operation of all. Some of them were even able to do this. At the Birmingham School, the Committee built a workshop in which the boys were employed by a master pin-maker to head the pins and to stick them in rows in paper.

THE OCCUPATIONS OF THE GIRLS

The industrial occupations of the girls were carried on with vigor and embraced many household duties, such as sewing, knitting, laundry work, baking, etc. Spinning was a favorite occupation, as was also straw-plaiting for both boys and girls, especially in the Midlands.

The four schools at Chester furnish a very good example of the work done in these girls' schools of industry. They were established largely thru the instrumentality of a Dr. Haggarth, a well-known physician of the town. In each of these four schools a different occupation was taught. The girls were taught to knit at the first school, to spin at the second, to sew at the third and to wash and get up linen at the fourth. Every girl was required to spend a year in each school—commencing at nine years of age at the first school, and ending at the fourth school at the age of thirteen years. For the sake of convenience all the schools were situated near the centre of the city. In the various reports no detailed information is given with regard to the numbers in actual attendance, altho they are said to be well attended. This was especially the case in the first three schools, which were very successful. No difficulty was experienced in securing work. The fourth school, however, was soon given up owing to the difficulty of procuring work for the girls.

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It will thus be seen that, with the exception of the one devoted to the teaching of spinning, these schools were an anticipation of the domestic schools attached to the more advanced of present-day elementary schools.

The intimate connection existing between these schools of industry and the labor market is shown by the fact that, in 1809, the spinning school had also to be given up, the great increase in spinning by machinery having inflicted disastrous consequences upon spinning by hand.

This latter circumstance also indicates and illustrates the principles underlying the foundation and conduct of most of these schools. Educational training, in the real sense, does not appear conspicuously to have been the reason for their existence. On the other hand it is inconceivable that some of their founders, at any rate, were not imbued with the true educational spirit and purpose. In several instances this was certainly the case—notably in regard to a Mr. Davis, a reference to whose work will be found in a later article. But it is equally certain that they had to combat the apathy, in matters educational, of the great majority of their fellow-countrymen, and to do this they seized upon the industrial principle as a means of inducing parents to send their children to school and keep them there, because of the money they could earn whilst in attendance thereat.

THE SCHOOL OF INDUSTRY AT LEWISHAM, KENT

This was another typical 18th century school of industry. In this case, however, its foundation possessed a more democratic basis than any of the others whose origin has been investigated.

In every other instance the school owed its foundation to the benevolence and liberality either of a private individual or of a charitable organization. This Lewisham School was established after a meeting of the parishioners, held in the early part of 1796, at which it was resolved that such a school should be founded. The parishioners responded with such liberality to the invitation for subscriptions that the school was actually opened on May 30th of the same year.

The school hours extended from 6 A. M. to 6 P. M. in summer and during the daylight hours in winter. The children received two meals per day, breakfast and dinner, at the school. These meals constituted a first charge upon their labor and 1s. 6d. per week per head was deducted from their earnings in payment.

Each child was taken, in rotation, for a short period each day from its industrial work to be instructed in reading, and this appears to have been the only intellectual subject taught. Their industrial occupations included spinning, winding and knitting. Some of the children were also taught weaving. In addition to these occupations the children manufactured a kind of cloth called "camblet," composed of goat's hair and wool. As a reward every boy who attended the school regularly and was of good behavior, received annually a suit of clothes made from the cloth and camblet of their own manufacture.

It was calculated that the weekly maintenance including teaching averaged 1s. 6d. per child. If any surplus were earned the children were allowed to take it home. In some cases this amounted to 1s. per week. The profit on the first year's working of the school amounted to 55 pounds and the future annual profit was estimated at 100 pounds. These profits were secured by supplying the inmates of the workhouse with most of their articles of clothing, as well as by the sale of knitted stockings and camblets, a stock of which was always kept in the warehouse to be sold either wholesale or retail.

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To show the good moral effect of the school, the report stated that one boy, who now bore an excellent character, was formerly an inmate of the workhouse, and whilst there was considered a thoroly bad boy. In addition to retrieving his character, he had earned in a month the sum of 5s. which he had placed in his master's care.

(*To be continued*)

A "MADE IN AMERICA" RED CROSS CHRISTMAS

ALICE M. CAMPBELL
Editorial Division, Bureau of Junior Membership, American Red Cross, Washington, D. C.

SANTA CLAUS began last year to move his headquarters from his traditional stronghold, Germany, to the U. S. A. Before the war, nearly every toy in his annual pack was labelled "Made in Germany." "Made in Germany" Christmas presents aren't welcome in America today, and moreover, Berthas, hand grenades, and dum-dum bullets have robbed Santa Claus of his raw materials and toy makers in the Vaterland. "Business as Usual" being his motto, he came to America to establish headquarters, and has found a welcome in the schools of Los Angeles, California. There, with the help of the Red Cross, the school authorities, and Los Angeles boys and girls, a Red Cross toy shop was established which served the triple purpose of supplying Santa Claus, making it a "Red Cross Christmas" and stimulating interest in home produce.

In the fall of 1917, the toy merchants of Los Angeles awoke to the fact that they might have to fail the boys and girls just at Christmas time, for lack of toys to sell. Somehow the bad tidings reached the Junior Red Cross. Here was an emergency that must be met. Plans were immediately drawn up for a Christmas compact between Santa Claus and the Junior Red Cross, to furnish toys made in the schools. The consent of the school superintendent was first won, and then a tour of the public schools made by the Public School Branch Committee of the Red Cross Shop to decide *what* should be made and *where*. Raw materials made their appearance thru the aid of the Committee purchasing agent, and work began.

Presto change! The staid manual training and domestic science rooms of every public school looked like Christmas eve without the tree. Piles of puzzles, games, and scrap-books; whole armies of policemen, nurses, Indians and soldiers; enough rabbits, lions and rhinoceroses to stock the zoo;—all these and many more such joys made their way from the newly-installed school toy factories to the shelves of the Red Cross shop. Here thru the agencies of mammas and papas, Santa Claus purchased them back again, and Christmas morning found them in the stockings of their makers. None of the joy and illusion was lost to the proud possessor because of the knowledge of those internal workings of Jack-in-the-Box which made him pop.

The Red Cross shop proved a popular shopping center—so popular that the Los Angeles toy merchants offered to buy the school produce wholesale. Eight thousand articles were sold at a gain of $1,586.00 thru the shop in two months. The demand for articles did not stop when Santa Claus had gone into retirement after the holidays, so business was continued, and the toy industry is firmly established in the Los Angeles schools. The phenomenon of killing three birds with one stone was here well illustrated. Santa Claus' reputation was

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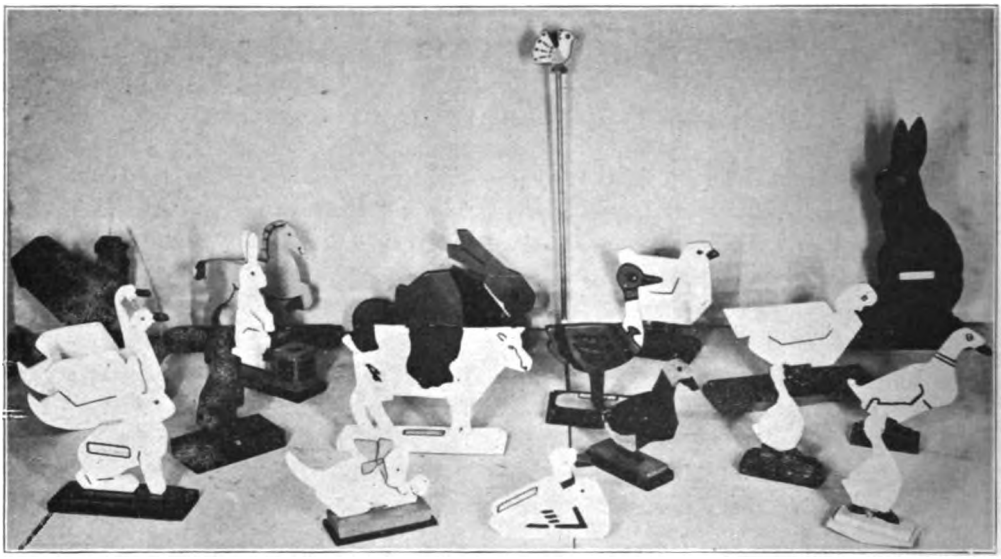
saved; $1,586.00 was earned for the Red Cross; and the Germans were shown that "Made in America" suits us and Santa Claus as well as "Made in Germany." And all this was accomplished with the

The following directions will be republished, with the addition of designs, in the Teachers' Manual which is issued without charge by the American Red Cross to teachers in Red Cross School Auxiliaries.



DOMESTIC ANIMAL TOYS, MADE IN PUBLIC SCHOOLS, LOS ANGELES, CALIF.

added advantage to education that comes from work which has a purpose comprehendable to the worker.

In other cities the schools are stretching out a hand of welcome to Santa Claus. For last year's bazaar, the school children of Milwaukee made 8,000 articles, most of which were toys. This year the Junior Red Cross program marks December as "bazaar month" for the schools of the Nation. The busy scene of last year's manual training rooms in Los Angeles and Milwaukee will be reproduced in city after city over the United States. Every stitch, every stroke of the saw, every brush full of paint applied means help for the new partnership of "Uncle Sam and Santa Claus Co." The "Company" designates the boys and girls of America, the Junior Red Cross, who are to "Make It a Red Cross Christmas" in this new way.

TOY MAKING IN MANUAL TRAINING CLASSES. TECHNICAL DIRECTIONS

General Purposes: (1) To practicalize manual training work in the schools by raising its educational, artistic and practical qualities to a marketable standard.

(2) To enable every child to make toys and other things of salable quality, "learning and earning" both in school and at home; and thereby fostering a national industry in the United States.

Specific Present Purpose: To concentrate the efforts of manual training work in the school for war purposes, holding Bazaars where children's productions may be sold and the proceeds turned over to the Red Cross.

The work herein specified consists of (1) Painted Wood Toys. (2) Painted Vogue Articles.

Toys are practical articles. Vogue articles are not toys, but they are objects of different practical uses. The designs of these toys and articles are characterized by a freedom from adherence to accepted styles, such as Mission style,

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Renaissance, etc. These toys and articles are *revivals* of national art instincts, expressing freedom in design and color, and embodying humor, caricature, quaintness, individuality, joy and art.

To Fit the Design to the Material. This process of conventionalization consists in simplifying and squaring the outlines of the motif in order that the design may express the characteristic of the material in which it is to be executed.

HUMAN FIGURE TOYS MADE IN PUBLIC SCHOOLS, LOS ANGELES, CALIF.

The field for such toys and articles is infinite. The educational possibilities and practical results of such work are equally incalculable. The American people possess just the qualities to find endless expression thru this kind of work.

Painted Wood Toys: These toys are of two classes. (1) Stationary Toys. Toys made by combining two or more pieces of material, glued, nailed and screwed together, and brilliantly colored.

(2) Mechanical Toys. These are toys that *"go"* and are built on some mechanical principle, such as wheel and axle, as in carts, or a similar device.

How to Pick Motifs. The toys are "drawn freehand," but any pictorial or linear design from books, magazines or posters may be used. These may be cut out of the book, or they may be traced. This gives the exact copy of the natural motif, for in most cases such motifs are natural. But the natural motif is not desirable. It must be changed to fit the material. The change is called conventionalization.

Manual training teachers will find this kind of procedure one of the secrets to successful modern manual training work.

Mechanical Toys. Motifs for stationary toys may be used for moving toys, and any stationary or statuary toy may be made into a moving toy, by attaching wheels to its base.

Means for Securing Co-operation: In schools where drawing and manual training are closely connected, children produce readily their own and original conventionalized drawings and also color schemes, on paper, which are very useful in their manual training work.

Transferring Pattern to Wood:

1st. Method: Place carbon paper on the wood, and the pattern on top of the carbon paper; then trace with pencil in the outline.

2nd. Method: Paste picture of pattern on the wood.

3rd. Method: Trace on thick paper and cut out templates, then trace with pencil around the edges of the template. These templates, if correctly made, are permanent patterns and may be

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used many times. This is the best method for school work.

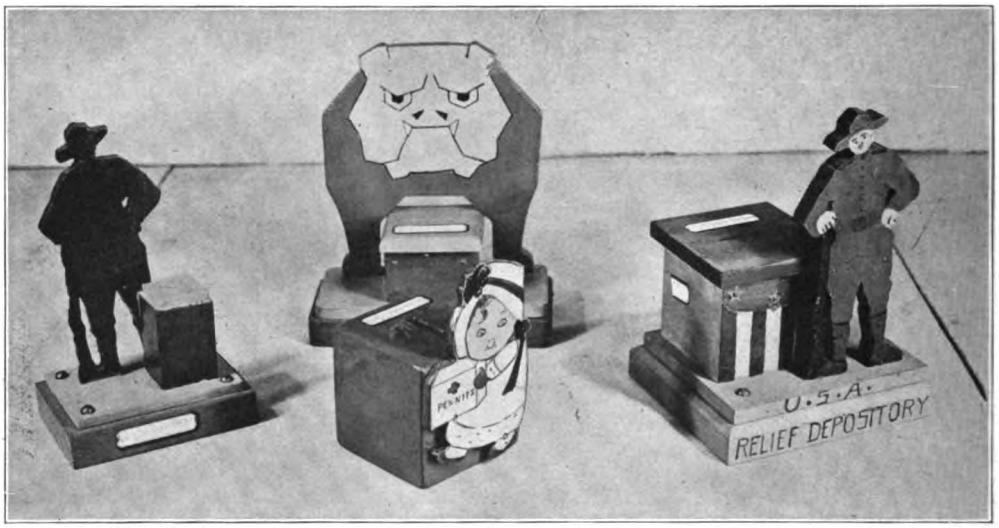
How to Cut Out Toys. These toys are cut out with coping saw. Each pupil must have a saw jack or an adjustable saw table. The adjustable saw table is placed in a vise. Pupils should sit or stand as they prefer. In both cases the saw table should be adjustable so that the pupil's position is comfortable and natural. The piece of work should not be more than 6″ below his chin. This insures a restful position in which the pupil does not tire quickly. This enables the pupil to blow the saw dust away, keeping the line clear. The sawing is done with coping saw or scroll saw.

Making Bases. The construction and design of bases is important. A poor base spoils the toy. The bases should be statuary in design. A base is made of at least two pieces, one overlapping the other. They should be square, oblong, or round as the case requires. Strips of ¼″, ½″ and ⅞″ stock are prepared by the larger boys so that the smaller boys may cut from these the required lengths. This sawing off is done with a back-saw in small mitre-boxes made for the purpose. The dimensions of these mitre-boxes are 1″ deep, 2″ wide inside, and 12″ long. Always have fresh cuts in the mitre box, insuring square cuts, and cut to line and to finish. No planing, no filing.

One piece of the base is thicker than the other—for smaller toys, ¼″ for the upper and ½″ stock for the lower part. Larger toys require a combination of ¼″ and ⅞″, to make a more substantial base of massive effect. All these features are clearly shown in the drawings presented.

Assembling the Toys. The toy having been cut out and the base pieces cut, the assembling begins:—

1st. Place the toy in the vise, feet up, and put glue on the contact points.



TOY BANKS MADE IN PUBLIC SCHOOLS, LOS ANGELES, CALIF.

2nd. Nail the upper piece of the base to the toy, using brads, ¾″ or 1″ as required.

3rd. Turn over and nail the toy to the thick base using escutcheon pins, one pin in each end. The extension of the lower piece is equal to the thickness of the upper piece. This rule gives a certain character to the work. Sandpaper off the rough parts and the wood work is finished.

How to Line. In cutting out the contours with coping saw cut on the line and cut to finish. No filing on the edge of the work. In cutting off base pieces in the mitre-box, cut on the side of the line and cut to finish. No block planing.

COLORING THE TOYS

The coloring of toys consists of two parts: (1) Applying a first coat. (2) Enameling.

The Primer or First Coat. All toys must be given a first coat of paint called "the primer."

When a large number of toys are made the dipping process is the quickest. This, however, requires more paint than the brushing method.

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The best method for ordinary school work is to paint the toys. For the first coat use ready made white lead or White Flat Tone. Brush on with flat sash tool brush, not less than 1" wide. After the first coat has been applied, stand up the toys and allow to dry for a week. At the end of the drying period sandpaper with No. ½ or No. 1 sandpaper. The flat tone surface will be found smooth and white and the toy ready for coloring.

Enameling. The coloring of the toys is made with colored enamel. Toy enamel is made by mixing small portions of colors ground in oil, in regular White Enamel thus turning white enamel into colored enamel.

(1) For example, pour a teaspoonful of white enamel into a water color cup, such as used in drawing and art work.

(2) Using a whittled wood spade, put a "speck" of Blue (color ground in oil) in the enamel. Stir and mix well and the white enamel becomes very light blue. Put in another "speck" and the enamel becomes a darker blue shade.

(3) Apply on a trial stick and keep mixing and testing, and when the desirable shade has been obtained, apply on the toy. Proceed in the same way with green, orange, red, brown, etc., for analogous or complimentary hues.

For features on small toys, use artists No. 10 flat brushes. For surface work use camel hair brushes.

(4) Allow to stand at least 24 hours, and the toy will show a smooth, pleasant glossy colored surface.

This is the typical process and is the same for any color used. It is the best method for children and beginners and yields good results.

Mass and Dot Painting. Natural details and linear effects should be discarded and avoided. Conventionalize eyes, ears, mouths, etc., "dotting them in"—using the point of a toothpick for "picking up" color and "dotting" it on.

Color Schemes. There are many color schemes. A color scheme which is easy, correct and produces excellent results, is the analogous hues, or analogous shades. Analogous hues mean light and dark shades of the same color.

Color schemes must be studied. Very little of applicable nature can be gained by reading about colors. The purpose of the above statements is to give helpful hints on the technique of mixing and applying color and enamels on toys.

LIST OF MATERIALS

For the toys herein contemplated the following materials are necessary:

Wood. Yellow pine or white wood S. 2 S., kiln dried, clear and milled to the following sizes:

¼"x8", ⅜"x8", ½"x12", ⅞"x12".

Nails and Brads: Wire brads ½", ¾", 1".

Shingle nails, blue.

Cigar box nails ¾".

Escutcheon pins ½", ¾", brass.

Brushes: Sash tool brushes, rubber set, flat, 1".

Artists' brushes No. 10, flat ½".

Artists' brushes No. 3, round, red sable.

Water color cups for mixing colors.

Paints, Color, ground in oil in friction can.

1 lb. Blue.

1 lb. Green, Chrome M.

1 lb. Orange, Chrome.

1 lb. Yellow, Chrome.

1 lb. Vermillion.

1 lb. Burnt Umbre.

1 lb. Lamp Black.

½ Gal. Flat Tone White.

½ Gal. Enamel, White.

Another Method of Painting Toys. Give the toys a first coat with flat tone, then instead of using enamel for coloring use white lead ground in oil and in it mix colors ground in oil in the same manner as before described. The toy so painted presents a dull or *mat* finish. If, however, a gloss finish is desirable, apply a coat of varnish over the dull color and a bright finish results.

In What Grades Can This Work Be Successfully Done?

In many schools this work has been successfully done in the 4th and 5th grades and it has been a great feature in the attainment of educational and practical results. Work along the same lines but more difficult and complex in design and color schemes has been accomplished by 6th, 7th, and 8th grades. Rockers, chairs, tables, etc., for use in the nursery, are excellent problems for 7th and 8th grades. Girls and boys alike do this work well because it calls into play their imagination.

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TOYS HISTORICALLY CONSIDERED

CASTLE W. ZARTMAN
Instructor in Manual Training, High School, Onarga, Ill.

IN the East Indian Islands there is a little bird called the satin bower bird that decorates her nest with toys. Acorns and bright cherries, shells, pebbles, —any lovely object she can find in the forest, this little bird brings home to make her living room beautiful. The very things she uses are what the world's first children had for their toys. A kitten, like a child or the bower bird, loves toys. It takes the falling leaves for playthings, or a bit of stick, or an empty spool. The first children that inhabited the earth were little savages, who ran thru the forest, finding acorn cups and birds' feathers along with pretty pebbles and shells for their toys. One of these children must have invented the stick dolly that every little girl has played with at some time or another; and one of the small boys must have broken down a green bough and invented the first hobby horse.

When man learned to take one stone and make a tool by chipping another stone into shape, he did the first thing that elevated him out of the animal world. When he began to mould clay into vessels and to plait rushes into baskets, he was taking the first steps toward art, and it was then that toy making began.

When the cave-dweller's wife shaped her cups and bowls of clay, she also shaped a rude doll for her little girl. Perhaps many years passed before she was able to make more than an oblong lump of mud with a smaller lump stuck on for the head.

When men understood how to work in metals, and to make all sorts of tools, be sure that with the appearance of all the resulting new crafts, there were many toys, for the development of a race of people can almost be traced by the playthings of its children. Every new invention has its toy counterpart, just as cook stoves, automobiles, sewing machines, air ships and phonographs have been reproduced as toys, each marking a step in eighteenth and nineteenth century progress.

DOLLS

Man's first dolls and balls of baked clay were not very beautiful. The things made by the early men were never very artistic; they are rather crude, yet even in them we see a yearning after what is beautiful. As men continued to develop they came to understand better what beauty is, and began to imitate the forms and colors in nature. Finally there came a time in the history of the art of making things by hand, when even toys were constructed with the greatest skill and beauty. Kings and queens delighted to possess and play with them, and grown-up people found as much pleasure in playthings as little children.

The first oblong mud dolls had no arms or legs. Later dolls carved in stone and bone, or of baked clay, show arms and legs, but the body is ungainly and out of proportion, and the arms and legs are all in one piece with the body. Dolls that we find in Grecian tombs had regular features and straight, well-made limbs. The bodies were generally of wood and the heads of some sort of composition. Romans generally modeled their statues more ornately than the Greeks, and really less beautifully. The dolls of Rome are no exception to this rule, yet they, like the Greek dolls, have their arms and legs jointed by means of little pegs, so that they can assume various positions. Such dolls as these were meant to be dressed, and the wooden framework was always covered with some sort of flowing draperies.

BALLS, TOPS AND HOOPS

In considering boy's toys we may look at the playthings of the children of Greece

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and Egypt. Some were made of baked gray porcelain; others of leather stuffed with papyrus, and still others of split cane. The ancient people, children and grown-ups alike, played ball. There were many forms of ball that resemble the modern games, yet we find it hard to believe that they were played years before the time of Jesus. Polo, or a sort of golf on horseback, which we play today, is an extremely ancient game. Types of tennis, football and basket-ball are very old.

In Japan, India, China and Persia, the long favored toy is the top. In these countries top spinning is an art; and in Japan not only an art but a science, mathematically wrought out. There are professional top spinners who do great wonders with their toy. They have musical tops, ice-tops, fighting-tops, battledore tops, played with by means of wooden paddles.

Hoops were a toy known to the early Grecians and Egyptians. Roman children also played with hoops, driving them along with a small stick as our children do today.

KITES

A toy that is almost always made by hand in every country is the kite. In Japan, India and China, kite flying is a national sport, and fortunes are staked upon it, as with horse-racing and prize-fighting in other countries. A popular kite is the fighting kite. The kite lines of a fighting kite are covered over with glue and a preparation like powdered glass is sifted over this and allowed to stick. The skill of the sport lies in cutting the strings of the other kites by sawing them with this prepared cord. Japanese and Chinese kites are often very artistic. They are made in all sorts of queer and lovely shapes and are covered over with pictures. Humming kites have attached to them a bow of bamboo with a rawhide cord, thru which the wind passes, making a humming sound to those listening at the end of the string.

WORKS OF ART

With the great renaissance of art in Europe, there was an awakening interest in all the crafts as well. Silversmiths, coppersmiths and goldsmiths made many exquisite ornaments and articles of everyday use in the precious metals, and many of these they reproduced in tiny sizes to be sold as children's toys. This art of hammering the metals into shape by hand was practiced by many men who were wonderful artists. It took a long time to make anything in this hand-hammered work, and even the smallest toy thus made was very costly, but usually more beautiful. These toys became the property of the rich children only and most generally only the royal children owned them.

Years later there was made for the son of Napoleon, whose toys are yet preserved in many European museums, a cannon and a gun carriage of ivory, drawn by ivory horses, harnessed with gold trappings that were set with turquoises and garnets. Another priceless toy of these extravagant old times, was a set of doll table furnishings in silver, set with diamonds. Besides the wonderful works of these silversmiths, the joiners and cabinetmakers reproduced their choicest pieces of furniture for dolls. Beds, chairs, tables, writing desks and dozens of other things were made in mahogany and costly woods. Inlays of various woods of contrasting colors, brass and ivory handles, carving and upholsterings with hand embroidered hangings made of these toy pieces works of real art.

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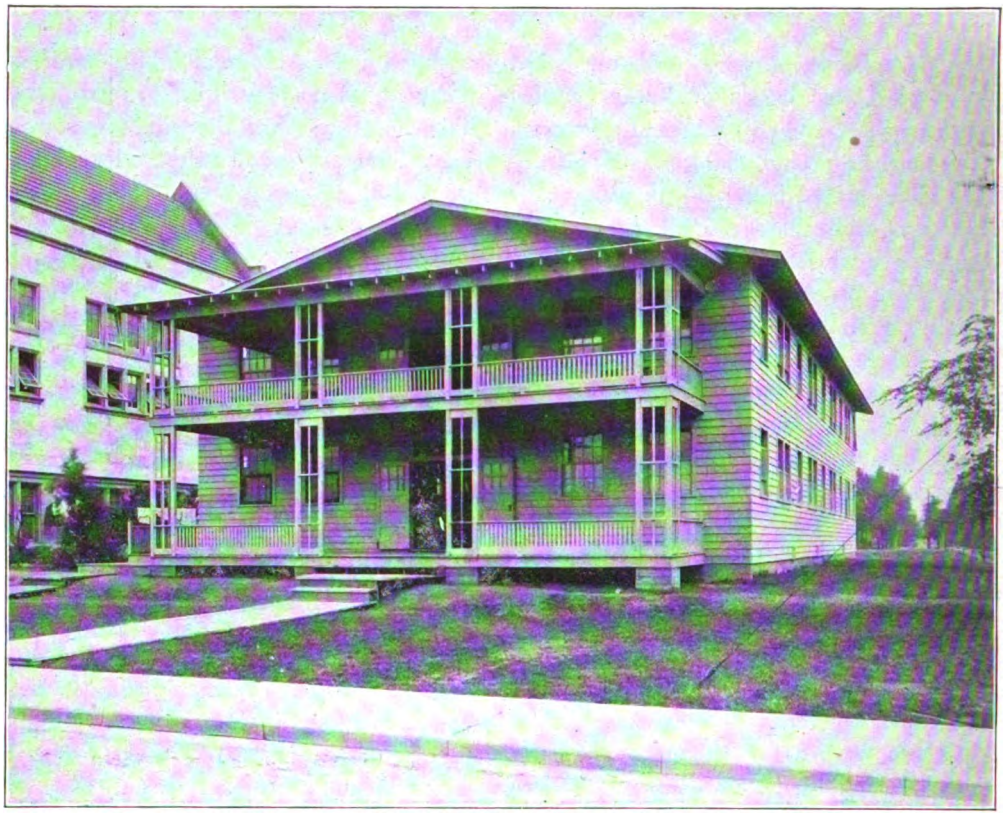

FIG. 1. BARRACKS MADE BY S. A. T. C. MEN.

TRAINING FIGHTING MECHANICS AT BRADLEY INSTITUTE

ALBERT F. SIEPERT
Educational Supervisor, Vocational Section, S. A. T. C.

SIX months ago the first detachment came to Bradley Institute for training as mechanics in various trades. Carpentry offered a real problem because of the lack of definite information as to what would be expected of these men in active service, and because as yet no courses were in operation elsewhere. Numerous needs developed very early in the way of equipment for the barracks, such as mail boxes, reading and writing furniture for the recreation room, gun racks, and clothes boxes. These problems provided ample work for preliminary hand training in the use of carpenters' tools. Then several garages were built, but the real carpentry did not begin until a need arose for additional housing facilities; the second detachment was to be larger in size, and the Institute had no available dormitories. Plans were made for the erection of a two-story frame barracks 48'x90' in size. This building was begun May 29th and was ready for occupancy when the second detachment arrived on June 15th. The photographs show some of the steps in building. Fig. 3 gives the layout of concrete forms used for the foundation and the class at work placing the concrete. Fig. 4 shows an old-fashioned "raising" except for the

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FIG. 2. INTERIOR OF BARRACKS, SECOND FLOOR.

military snap which is so characteristically absent in civilian life. Fig. 5 shows a second floor view as the rafters were put in place. Fig. 1 shows the completed building with its porch. Fig. 2 gives an idea of the interior on the second floor. The second detachment built a similar barracks to house the next group, and the third in turn built

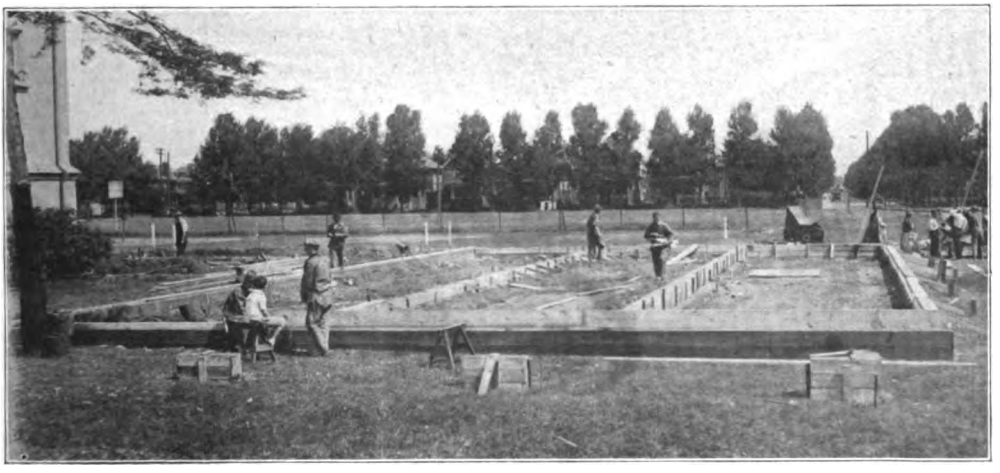

FIG. 3. MAKING THE CONCRETE FOUNDATION.

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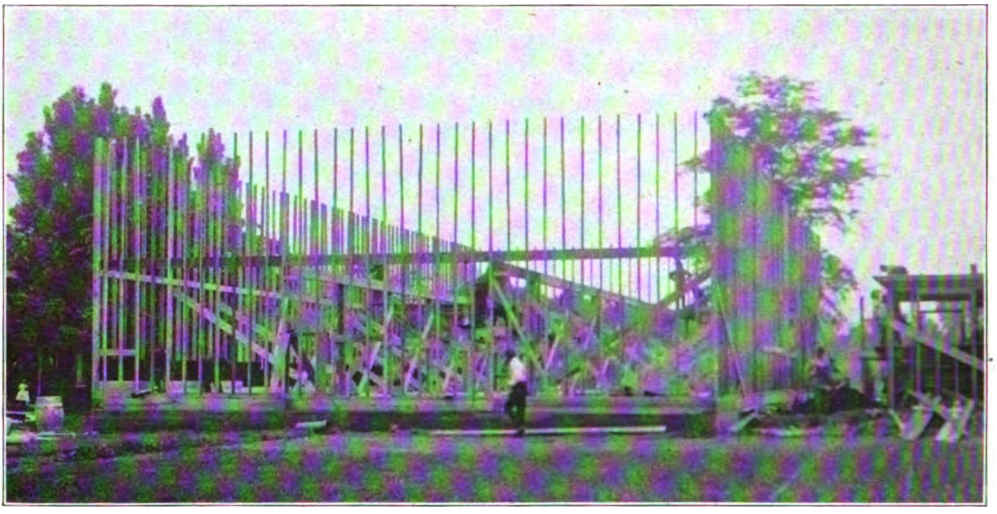

FIG. 4. PUTTING UP THE STUDDING.

a new barracks for the S. A. T. C. boys. This building was begun six working days before it was in use. Forty-four loads of gravel, one hundred thirty-five sacks of cement and forty thousand feet of lumber were used in its construction. The class made the window and door frames, also the doors, as part of their training. The building is 48'x90', in size, with 22' studding.

FIG. 5. PUTTING UP THE RAFTERS.

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The success of the Carpentry Classes has been dependent upon a few essential elements. (a) The teacher, H. L. Hurff, is both a practical carpenter and an excellent organizer and teacher. (b) Actual construction of a type closely akin to army needs has been adopted at the Institute, consequently the men have had the inspiration of a "real job." (c) A careful selection of men as to fitness for particular vocations has preceded assignment to classes.

HOW I STARTED MY GRAMMAR GRADE BOYS LAST YEAR

SIXTH ARTICLE

LAST September I entered the Newark, N. J., school system as teacher of manual training in a school just put on the Gary plan. Perhaps my initial work there may be of interest to other manual training teachers taking up work in a new system. I shall not attempt to repeat the methods so ably explained by the former writers, but to give some of the methods peculiar to my department. The course, as outlined for our seventh grade, is particularly adapted to my method of procedure in giving instruction, for it has always been my hobby to teach the mechanics of any course first, and the theory or knowledge, afterwards. This plan differs somewhat from the principles of best educational theory, but it works and is therefore of value in the shop. It has never been my purpose to have the graduating classes complete their work by being able to use the plane, saw and chisel accurately, but rather to have the beginners acquire this skill as the principal tool of their work. We have long since learned that good writing is the result of mastering the mechanics of penmanship, and not as the result of much writing. With this introduction I shall explain my first unit of work with a seventh grade class.

The course specifically states that there must be a well-made model before the class at all times. This, of course, would be classified as copy work, but its value for the beginner is apparent. I was recently asked if I taught by the use of the model, the blueprint, the black-board sketch, or by oral direction, and I replied that I employ all four methods. Every teacher knows the value of teaching thru the different senses.

According to outline, the first four lessons were devoted to mechanical drawing. These lessons were on the mechanics of the work although some of the plates were afterwards used as working drawing for the benchwork. The first plate, being the top and front views of a 2″ cube set in three different positions, brought out the use of tee-square, both triangles and scale as well as the method of mounting, lettering, etc. The work on this plate was explained, step by step, from blackboard sketch. The second plate contained some compass work and a working drawing of the first benchwork model, providing for some original thought in design. The following plates were either working drawings, freehand sketches or isometric projections of all the class projects.

From the drawing a mill bill of stock both "rough" and "finished" was made and a price set on the finished product, if very well done. The teacher being new in the system, the first benchwork lesson contained a considerable element of examination. Small catalogs were passed out and the class was directed to write an order on a local hardware firm for six of the tools on the bench.

The first benchwork problem was pure mechanics, being a prism ¾″x3″x10″ with

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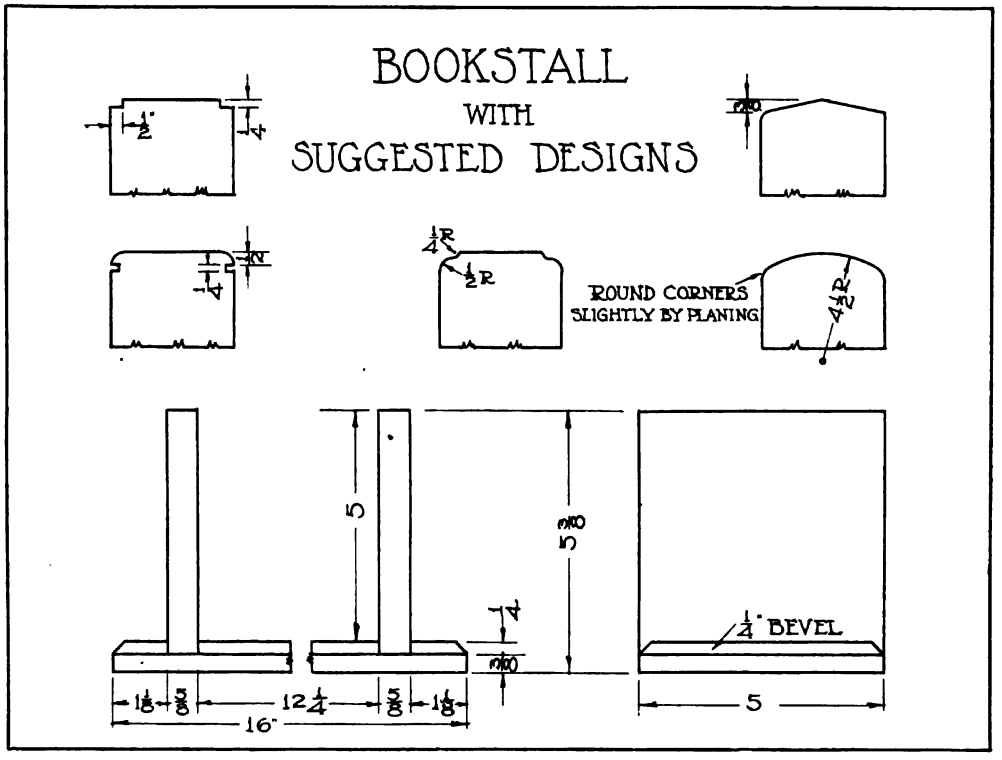

chamfered edge on one face. It was practically an exercise in squaring to dimensions and the class was directed to proceed accordingly. The problem showed the value of developing mechanical skill early in the course. It was not at all difficult for the teacher to decide whether the class should obtain accuracy of dimension or accuracy of form. About 50 per cent of the class completed the problem to accurate size and accurate form. The others had to reduce the size in order to obtain square edges, parallel sides, and no broken corners. A few had to use a second piece of wood to satisfactorily complete the problem.

The second problem, the book-stall, contained all of the mechanics of the first problem and several new features. See Fig. 1. The working drawing was submitted by the Supervisor of Manual Training as a basic design for this model. In developing the design for the ends, the teacher put several 5" squares on the blackboard and sketched in the designs submitted by the supervisor. After discussing these, volunteers were asked to sketch in other designs in the vacant squares. From these sketches each pupil selected a design and developed it on his working drawing. All teachers are familiar with the method of directing the bench-work on this model, so I shall note only the features which may have been developed differently in my department. In making the ends, the pupils were directed to square piece of material to the required width and thickness but a little longer than the combined length of both ends. The ends were then designed on the wood and cut out. This reduced the number of exercises and provided a greater surface for planing. After the bottom board was squared to dimensions the gains were made

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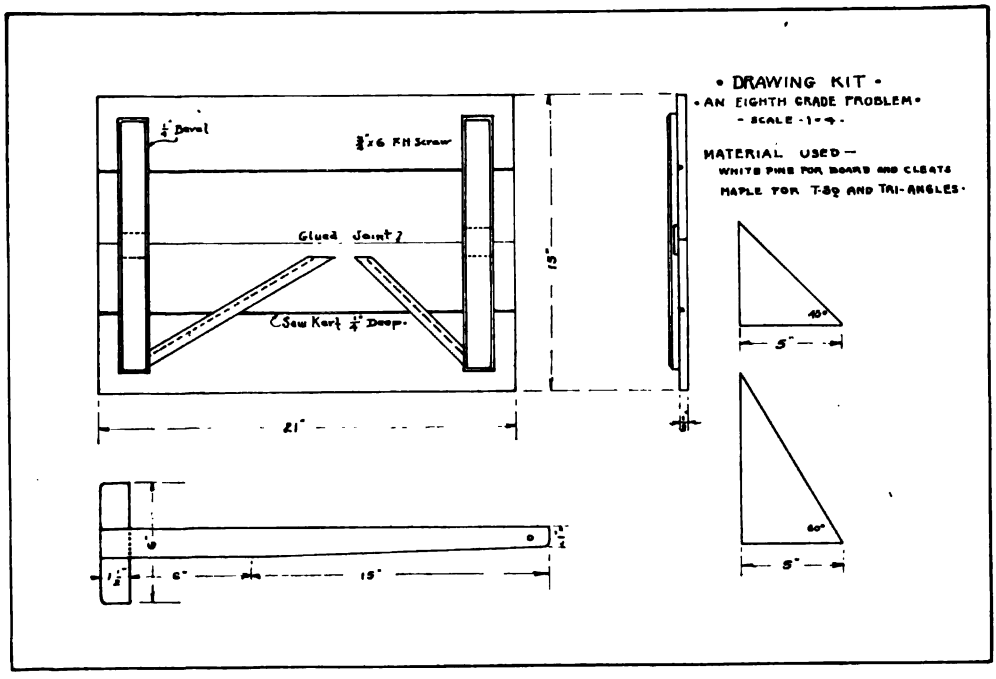
before chamfering the edge. In sawing the gains a small piece of wood was clamped to the line to act as a guard. After sawing one side of the gain the finished end was used as a gage to set the guard for the other side. The use of the saws afforded opportunity for a lesson on these much abused tools. After giving the usual lesson on the cross-cut and rip-saws, both saws were tested in ripping a piece of white wood, counting the number of thrusts in making the same length of kerf. Then both were tried for cutting across the grain and the under surface of the wood examined for smoothness of cut. This demonstration produced very pleasing results.

The book-stalls were stained and all but two finished with a wax polish. The two best ones were varnished and rubbed. After all the book-stalls were completed, a new value was placed on each, this value ranging from 25 to 100 per cent of the prearranged price. In nearly every case just a little more effort expended in refining the work would have greatly enhanced its value.

A valuable lesson was learned here in the analogy of cheap and high priced furniture, noting whether the individual efforts were being bent in the direction of bargain counter service or skilled workmanship.

FRANCIS S. COLLIER,
John Catlin School, Newark, N. J.



IN the majority of public schools where manual training is taught such work is started in the seventh or even a lower grade, therefore boys upon reaching the eighth year should be well acquainted with the shop environment and familiar with many tool processes. When my eighth year classes come to me for the first time I do not feel that it marks an epoch in their experience or that any change in method, except that necessitated thru natural growth, is desirable. Boy interest which plays such

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an important part in successful work, and has been secured to a large extent thru the play instinct may now be obtained to a greater degree thru an appeal to the industrial and mechanical instincts. Problems presented should be rich in educative value; that is they must make the boy think.

Last year with the above ideas in mind I started an eighth-year class on the problem of the drawing-board. I believe there is enough of value in this problem to amply justify its introduction in this grade. It gives a splendid opportunity for the attainment of skill which we must now begin to demand of the boy, and at the same time contains a wealth of industrial content. I do not know of a problem better adapted for the teaching of logging and milling as well as the physical structure of wood. The board is made in two parts, thereby making the glue joint a necessity.

Aside from the technical and educative value the problem may possess, I have found that it appeals to the boy. The designing and drafting of things mechanical is distinctly a masculine occupation, and to be the owner of a draftsman's outfit is quite to the liking of most boys.

ALLEN DAVID BACKUS,
Lafayette School,
Newark, N. J.

EDITORIAL SUMMARY OF THE FIRST FOUR ARTICLES

DIFFICULTIES arise in attempting to comment briefly upon the first four articles on "How I started My Grammar Grade Boys Last Year," differing as they do in the presentation of the subject. One can do little more than emphasize important points that are made or suggested.

Avoid rules and regulations in the manual training room, particularly posted or printed rules. Such direction is always resented by the live boy. Assume that infringement of good conduct is at first due to lack of knowledge. Explain what is expected, and why, rather than correct what has happened.

First lessons upon tools should emphasize their proper use and the results to be expected, rather than details about their construction and adjustment. Tools should always be in the best possible condition and properly adjusted when they are first placed in the hands of beginning pupils. This is important, for the first impression that a pupil gets of the action of a tool is lasting. The proper action of a good tool is satisfying and will always be desired if once understood. Detailed talks upon the history, construction and adjustment of tools should come after, rather than before their proper use. Mr. Faunce's "Keynote to successful manual training work" is particularly significant at this point. *"Interest"* is vital in early lessons and "lecturing" should be avoided. Confusion results from too much information at the moment when interest is centered in activity.

In general, use as few tools as possible in beginning lessons, avoiding their more difficult uses. For example, the marking gage which is one of the most difficult tools to use, might have been omitted in Mr. Woodward's lesson in getting out material,—in fact, may well be omitted in the first half year of work.

A fine example of this point is found in the fundamental process of working material to size. The usual procedure in the manual training class is to teach, in one of the beginning lessons, the various steps of planing stock to three dimensions. These steps are difficult to execute and remember, and confusing to the boy who is without experience in tool work. They would be simplified by following the methods of industry. All of the lumber that comes to the

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hand woodworker of today is surfaced to the required thickness. Why should the manual training teacher not accept this fact and confine his early work to length and width, placing three dimension work at a much later period than is usual in the course of work? The manual training exercise for its educational value cannot longer supersede the methods of accepted practice.

Incidentally, this last point is very fundamental to successful execution and should have the most thoughtful and careful consideration of the teacher. The boy who can be trained to work a piece of material systematically and accurately to required dimensions may be depended upon to execute skilfully any tool exercise.

Two essentials of a successful lesson are a clear and definite outline previously planned, and the use of illustrative material. Every teacher should put in writing logically and sequentially the steps he would take in giving his lesson to the class, even though he does not find it necessary to use this outline in his presentation. Nothing gives greater assurance of successful teaching and avoidance of the hit-and-miss class work common among manual training teachers, particularly beginners. The detail of such an outline would depend upon experience. Illustrative material is valuable in teaching all subjects, and in no branch of educational work is there a richer supply from which to draw than in manual training. Mr. Johnson gives a good example of a thoughtfully planned lesson and suggests incidentally the use of illustrative material.

He also points out the possibilities of correlation with shop work through mutual discussions of problems in class. Correlation is one of the most important considerations in educational work at the present time. It is the opportunity of the manual training worker which he must develop if his work is to have a high evaluation. Mr. Gunther gives a good example of correlation with English.

Both Mr. Attwood and Mr. Stahl hint at a very important factor in manual training work—the development of initiative on the part of the pupils in the selection and design of their projects. The day of the set model has passed. We must reckon with the individual *interests* of the pupil.

The writers deal with individual projects. This would be expected in beginning work, but it is well to recognize the fact that in the future of manual training the individual project by and for the individual pupil will be the exception rather than the rule. Such work will have a comparatively small place in a shop course, or as far as the pupil's personal interests are concerned, and may even be done outside of class hours. The tendency of manual training work is in the direction of production on the quantity and commercial basis, in the service of the schools, the community, or, as in the present time of war, to meet emergency needs, and to better meet the demands of vocational education. This work may be done even with beginning classes. A fine example of this method under such conditions is given by Mr. Woodward in getting out material for bread boards.

Certain steps are essential to a successful manual training lesson, varying in number and importance as the demands of the hour may dictate:

1. The presentation of related work or material.
2. The approach to the problem through review or appeal to the interest.
3. The statement of the problem.
4. The demonstration in one or more parts as the analysis of the problem may require.
5. The summary from the class.
6. General review.

In giving life to this outline, there must be a proper balance of the various elements

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we have discussed to meet the needs and abilities of the class:

1. Thoughtful attention to details of shop management.
2. Careful consideration of details of equipment.
3. Recognition of the value of appeal to interest.
4. A definite and logical lesson outline.
5. Judicious use of illustrative material.
6. An intelligent attempt to relate the work to other school subjects and to life experiences.
7. Ample provision for the development of initiative and originality.
8. Opportunity for service and preparation for life vocation.

W. E. ROBERTS,

September 7, 1918.

MAKING DRAFTSMEN IN TEN WEEKS

CLARENCE E. HEDDEN

Assistant Professor of Vocational Education, Carnegie Institute of Technology, Pittsburgh, Pa.

CAN women be satisfactory employees in the drafting room? And how long a time will be needed to prepare them? War emergency has taught us that many things hitherto considered as impossible, or at least impracticable, are both possible and practical. And women are now doing things which were not considered feasible before the war began.

Many of these things the women were not in any degree prepared for, and as a result it has been necessary to provide special courses for training them for the various fields in which their services have been needed. This has led to the rapid and broad application of the so-called short intensive unit course. In some cases these have been no more than short periods of demonstration, as in the case of training elevator girls, power-machine operatives, trolley car conductors, etc. Other lines have called for more complete and elaborate training, covering a considerable length of time.

Probably one of the most recent and perhaps one of the most promising lines of work opening to women is the tracing and drafting work, exclusive of actual designing, of the ordinary drafting room. The working conditions are particularly attractive, usually being from one to two hours shorter in working time per day than most commercial or industrial positions and the rooms are usually light, airy and clean. Also, the variety in the work is much greater than that offered by stenography, retail selling or clerical work.

The question is: Can girls be made proficient in this line of work? and if so, how long a course of training will be necessary, and what should be its nature.

For a number of reasons it will quite evidently be necessary to break away rather decidedly from the traditional drafting courses such as given in the technical schools. Just as the cantonment military training camp is different from the military schools; so the intensive drafting course must differ from the general drafting courses.

The length of periods is possibly the first and naturally one of the most radical points of deviation. Bearing in mind the fact that most of those taking such a course either are at present or anticipate being, employed for from seven to nine hours per day, the question of length of hours is reduced to merely a consideration of "how does mental concentration vary from actual work?" If a proper amount of va-

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riety can be introduced into the day's program, the tedium will be relieved sufficiently to permit of at least a 6½ and possibly 7-hour instruction day, running from 8:30 or 9:00 to 4:30 or 5:00. This should, of course, be broken by rest periods of fifteen minutes during both morning and afternoon sessions.

As to the actual ground covered by the instruction and the work required of the pupils, it will be necessary to limit both to actual essentials. This would naturally lead to a strong difference of opinion, unless the so-called essentials could be shown to consist of fundamental principles having pretty general application.

The writer believes that in such a course as proposed, namely, six weeks for tracers and ten weeks for draftsmen, the following schedule should develop fairly satisfactory employees, if a minimum of preliminary education for the one be the completion of grammar school, and for the other completion of high school.

DAILY SCHEDULE

Exercises involving use of instruments.

Lettering practise (at least one hour per day thruout course).

Exercises involving reading of drawings.

Exercises involving use of standard conventional representations.

Home work: One hour of assigned reading from text.

Tracing; beginning with elementary exercises the first of the second week, about two hours per day, increasing to three, four, and five hours per day during the fourth, fifth and sixth weeks.

A variation in the hourly allowance given to these items provides the necessary variety and the desired progression in the amount of tracing needed in the course for tracers, and the ability to read drawings and to detail from assemblies, needed by those taking the course in drafting. These schedules include those things which appeal to the writer as being the essentials which cannot safely be omitted. It is not claimed or to be expected that such a course will turn out as thoro or completely equipped draftsmen as the regular four-year technical college course, for much of the ability of the latter comes from a wider knowledge of related technical subjects, such as strength of materials, machine design, kinematics, and descriptive geometry, none of which may be included to any large degree in such a course as here described. Supplementary study and evening courses are available, however, which should in a relatively short time enable a woman to qualify herself for a high degree of proficiency in this field of work.

This is but one of the many new experiments which the war emergency is forcing upon us. Another one soon to be tried will be the training of women for routine commercial chemical analysis as carried on in the steel and rubber industries and, in fact, in nearly all manufacturing processes using raw materials as bases. Still another will train women to perform the standard physical testing of sample specimens for strength of materials.

The Carnegie Institute of Technology is at present conducting classes in tracing and drafting and anticipates starting chemical and physical testing classes for women in the near future.

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A TRIP TO THE MASSACHUSETTS SCHOOL FOR FEEBLE-MINDED.

GEORGE M. MORRIS.
Assistant Supervisor of Manual Arts, Boston, Mass.

THIS is a public institution which cares for mentally deficient people of both sexes. The school is at Waverly, and has at present about 1400 inmates, male and female. As a kind of annex to the Waverly school, there is a farm colony at Baldwinville, Mass., where the boys who are physically mature but are of low mental development are given training in the mechanical work of farming. At present, there are over 200 such boys at the Baldwinville colony.

Throughout the school the boys and girls are taught in separate rooms except in the lowest, or the kindergarten grade. While many boys go from the institution into positions of employment outside, the girls seldom, if ever, have this opportunity. All the products of the many shops are consumed in the institution. The manual activities are numerous and call for varying degrees of intelligence from the simplest performance such as walking up steps to the working out of intricate lace designs or the making of a sewed door mat. As far as possible, the work is adapted to the interest of the individual and made as varied as the intelligence of the pupil will permit. Care is taken to have one line of work continue only as long as the attention of the worker can be held without strain. The usual "shop period" is one hour in length.

Entering the first room, the very elementary work of developing the senses of feeling, hearing, seeing and smelling was observed. Here, a group of boys ranging from eight to twelve years of age were being tested for such intelligence as would be found in a normal child three to five years of age. A boy reached into a bag and picked up an article within, and before withdrawing it, was asked to tell what it was and then asked its use. The next exercise consisted of selecting a piece of cloth which matched in color the piece held up by the teacher. Then the problem of setting irregularly-shaped blocks into openings of like shape was given, followed by selecting from the table, covered with wooden blocks of various shapes and colors, that block which conformed in shape and color to a drawing on the board pointed to by the teacher. Then came a very interesting exercise which demanded close attention and prompt action. On the table there were placed before each boy, five or six rectangular blocks of different colors. The teacher standing at one end would first pick up one block and raise it above her head. The boys would imitate her with the same-colored block taken in the right or left hand as the case might be. The teacher would then put the block back on the table placing it in a certain relation to the other blocks. The boys, observing carefully, would do the same. Various combinations would be tried, bringing in the use of both hands and requiring very close attention on the part of the boys in order to go thru the same performances as the teacher. On the last table, were materials for a variety of simple manual operations such as sewing of beads, simple weaving on frames, placing of pegs in the holes of a peg board, sewing on buttons, etc.

The aim of all the work of this room seemed to be to hold the attention for a very limited time on each of the "games" which would train the senses and develop co-ordination of hand and mind.

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In the first girls' shop visited, there were a number of women busily at work at machines, making costumes for the 1400 or more inmates of the school. To the casual observer, the women in this room showed especial intelligence, and had such skill as would enable them to make a good living in a commercial factory. As explained by the guide, the reason for their being in this special school is their inability to adjust themselves to the conventional life of society.

The next room showed girls of lower mental development working with a great variety of materials. The activities of weaving, knitting, hammock making, spinning, scroll sawing, pottery making, basket making, etc., were being carried on.

Next was to be seen the hand and foot-power looms being operated by physically strong girls and women who seemed to be enjoying the hard work which these old-fashioned machines necessitated. Rugs for use in the schools and coarse woven cloth for garments were being made in this room. In contrast to the primitive loom work, the more modern knitting machines of the next room would prove to some a relief. Here, the girls were making all the sweaters, stockings and caps worn by the members of the school. In one year, about 6,000 pairs of stockings were made on these machines. Before speaking of the various shops in which boys were working, the cooking and domestic science department should be at least mentioned. For this purpose, there is a beautiful sunny room well equipped to give the best instruction in the art of cooking, waiting on table, and bed making.

Upon entering the cobbling shop, one is most impressed by the interest and enthusiasm with which the boys go at the shoe repairing. Upon the occasion of the writer's visit, each of twenty boys was nailing on a good serviceable sole to a boot, later to be worn by either himself or another boy in the school. The hammering in of pegs seemed to give the boys a great deal of pleasure, judging from their faces. The boys in the next room were operating looms similar to those in the weaving room occupied by the girls mentioned above. Toweling, linen crash, and rugs were produced here.

In the other shops visited, the boys were at work with a great variety of materials, the use of which involved varying degrees of skill. Hemp mats, both tied and sewed, different kinds of brushes and brooms, were some of the products of these shops. In the woodworking rooms the boys were making sleds, repairing furniture and constructing toys. There were no power machines for the boys' use because, no doubt, of the danger due to the irresponsibility of this grade of boy.

When the gymnasium was reached there was, fortunately, a large class of girls being drilled in gymnastics, marching and simple dancing. The girls went thru the various motions with much zest and with considerable grace. The work in the gymnasium, no doubt, is largely responsible for the fine health which seems to be characteristic thruout the school.

The kindergarten room was much the same as would be found in a school for normal children where games play a large part in the instruction. The work of several recitation rooms including lessons in reading, counting and simple arithmetical processes, matching of colors, penmanship, etc. was observed.

As a fitting climax to the many interesting surprises, the girls' orchestra of fourteen pieces rendered three numbers in an especially creditable manner.

Dr. W. E. Fernald, the head of the school, with the assistance of enthusiastic specialists and teachers, has built up an organization particularly well equipped to

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handle the many problems involved in bringing wholesome interests into the lives of a large number of unfortunate people. By means of frequent clinical tests, the experts are able to determine to a large extent the character and limitations of the mind and to give advice as to methods of training. In the majority of cases, the chances of growth are so small as to be depressing to one not professionally acquainted with the problem. However, to offer the feeble-minded child the opportunity to associate with others of his kind and to live the highest life of which he is capable is a noble work in which Dr. Fernald has been particularly successful.

THE BRIDGE BUILDER

An old man, going a lone highway,
Came at the evening, cold and gray,
To a chasm vast and deep and wide.
The old man crossed in the twilight dim,
The sullen stream had no fear for him.
But he turned when safe on the other side
And built a bridge to span the tide.

"Old man," said a fellow pilgrim near,
"You are wasting your strength by building here.
Your journey will end with the ending day.
You never again will pass this way.
You've crossed the chasm deep and wide,
Why build you this bridge at evening tide?"

The builder lifted his old gray head,
"Good friend, in the path I've come," he said,
"There followeth after me today,
A youth whose feet must pass this way.
This chasm which has been as naught to me,
To that fair-haired youth a pitfall may be,
He, too, must cross in the twilight dim—
Good friend, I'm building this bridge for him!"

—From *The Artisan* for July.

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EDITORIAL REVIEW OF THE MONTH

VALUE OF FUNDAMENTAL EDUCATION

EVERY month, as it passes, makes it clearer that our participation in the war is bringing home to the American people the value of education. Nothing before in our history as a nation has brought out into such clear relief the fact that fundamental education is a prerequisite to leadership and efficiency. Nothing before has made it so evident that, with fundamental education and physical fitness, special training may become quickly effective, and that without the fundamental education, even with the physical fitness, certain kinds of special training do not produce the desired results. In other words, given physical fitness, a young man's prospects are approximately in direct proportion to the character and extent of his fundamental education.

During the gathering of the young men of the eighteen-to-twenty-one-years group to register as members of the Students Army Training Corps, many parents have expressed deep regret that their sons had not been given a complete high school training so that they could take advantage of this remarkable opportunity for college training at government expense. One mother said, and doubtless thousands of others have said, "If I could have had my way, John would have gone thru the high school," but the needs of the farm for workers, or the attractiveness of a factory pay envelope, or some other temporary call has kept the boy away from the high school. Now the parent and the boy both regret the lack of schooling. The boy's appreciation of the value of an education has increased tremendously. This is bound to have an effect upon the education of the future. When this boy comes to have a son, he is going to be kept in school until he wins a diploma.

But the question here arises What is included in fundamental education? Surely, no one who has been in touch with the war training work will give the old, narrow definition of education. Fundamental or general education must include ability to use the mind with reference to industrial and commercial and art processes as well as with reference to figuring and writing and reading. As never before we see the enlarged place that must be occupied by the manual arts. We see, too, that the field of manual arts work itself must be more inclusive than before the war. Especially has the importance of metalwork of various kinds and of the practical study of mechanism come to the front. Hereafter, we may believe that fundamental education will be considered quite inadequate and behind the times if it does not give reasonable place to training thru experience in typical manual arts.

VOCATIONAL TRAINING AND VOCATIONAL EDUCATION

NOT long ago, Dr. Frank P. Graves, dean of the School of Education of the University of Pennsylvania, was quoted as saying that the educational pendulum has swung too far in the vocational direction and called upon his hearers to discriminate between vocational training and vocational education. He fears the former is too often mistaken for the latter, and that we are in danger of "catapulting" into a life of manual labor many children who are victims of their own caprices or the selfishness and greed of their parents or guardians.

Whether Dr. Graves' fears are well founded or not, the distinction he makes between vocational training and vocational education is a good one. We should not regard short emergency training courses or

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narrow vocational courses in any subject as substitutes for an education, tho they may be of great value as vocational training.

"Education" in the best modern use of that term involves both vocational and cultural elements, yet, unfortunately, the term is not always used with that meaning. Consequently we have to add the adjective "vocational" to be sure that we are understood. When the time comes that all men get tht modern viewpoint, we can drop the adjective without being misunderstood.

Culture and vocation should be two aspects of the process of complete living, whether a man is a preacher or a plumber. Why then do we need to draw a sharp imaginary line between cultural education and vocational education? When we do so, is it not an admission that we have a narrow view of education or that education is defective? If education were properly balanced, as it may be, with reference to complete living, would we need to use the term "vocational education" at all? "Vocational" and "cultural" as modifying and contracting terms could then vanish. We would still have, however, such terms as industrial education, agricultural education, classical education, medical education, etc., but all of these would include what is both vocational and cultural.

Would it not be well then to reserve the term "education" for what is both vocational and cultural, and use the term "training" for certain narrower fields of instructional activity? If it were possible to hold to such a use of terms, it would help toward clearer, truer thinking.

EMERGENCY TRAINING FOR EMERGENCY WORK

THE Emergency Fleet Corporation, thru its training departments, is making good ship builders out of clergymen, physicians, lawyers, college professors, high school and grammar school teachers, bank clerks and men from other walks of life who were in no way practiced in manual labor before the war. Among the trades taken up by these white-collar novices are riveting, shipping and calking, drilling and reaming, ship carpentry, and pipe fitting. It is reported that it usually takes from two to four weeks for one of these men to prepare himself satisfactorily for such work, altho some grasp of the fundamentals can be gained in a much quicker time. By this procees 10,000 absolutely green "hands," many of whom never saw a ship before, have passed thru the twenty-one training departments established by the Education and Training Section of the Emergency Fleet Corporation.

SCHOOLS OF INDUSTRIAL ART NEEDED

IN a recent issue of *New York Evening Sun* Dr. James P. Haney, director of art in the high schools of New York City, makes a strong appeal for more American schools to train art workers for the industries. The following paragraphs are quoted:

Last year, despite the war, we spent over $250,000,000 for new furniture, and more than that for carpets, textiles, wallpapers and other interior decorations. Over half a billion for home furnishings alone, to say nothing of other vast sums paid for dress goods, millinery, china, glass and the multiple products of the lithographic and printing press. All these figures refer to the products of machines, but behind every yard of textile, every roll of wallpaper, every rug and chair was the designer, the man with the pencil, by virtue of whose skill the finshed product entered into competition with the work of other designers. More than this. Every yard of cretonne, every curtain, cup or spoon was bought by the purchaser because the latter thought it, other elements equal, to be the best in design.

It serves no purpose to sneer at the taste of the public who did the buying. That taste is steadily rising. The demand for things better in color and pattern is continually becoming

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keener. The American home is a better furnished and better decorated home than it was a generation since, and the American demand is for better designed material in every line from furniture to car "ads."

This demand will surely grow more imperative. How are we to answer it? We have the talent but it is untrained. Our own markets are great, and others offer. South America is at our own doors. Can we not enter her marts on equal terms with other countries?

We are a great industrial nation, but one without an industrial art. Until the advent of the war we imported the greater number of our designers. These men were State trained, artist-artisans, selected with care and taught in schools the like of which we do not know. Our source of supply is now cut off for years to come. How shall we make up the deficiency? We have a few professional schools with design and craft courses, nearly all under private auspices. There are scattered classes elsewhere. But as for highly organized, well equipped city and state schools for the training of industrial designers, we have practically nothing—no school for art metal workers, none for printers, none for silversmiths or carvers, none for lithographers, none for bookbinders and none for stained glass makers. Few of our textile schools give adequate training in design, while not a single jewelry centre has a school to feed the industry with fresh blood and inspiration.

What a contrast is presented by our neighbors in trade! France sees in each large city an industrial art school. Dozens of other schools in the smaller towns serve to aid local industries. Paris has over a dozen craft schools, the great Bernard Palissy school leading with its many courses in the applied arts. London has her central school of arts and crafts housed in a great building crowded with studios, while thruout the metropolis one can find a dozen others for the training of the artist-artisan. England indeed is dotted over with training grounds for the craftsman.

Several of these, as Manchester, Birmingham, Leicester, are famous for their fine buildings and elaborate equipments. Before the war Austria prided herself upon her State trained designers, while Germany used all her thirty-five industrial art schools as forcing grounds for the talent she proposed to use in her propaganda to gobble the world's trade.

Ever since 1850 this race for the applied arts market has been on in Europe. The first great international fair at London showed each exhibitor where he stood and set all in active competition to build up their industrial art schools. Every year since these schools have been growing stronger—better plants, more equipment, higher standards of teaching.

We have been blind to the lesson taught us. Now is no time for recrimination or academic discussion of the reasons for our shortcomings. We must wake up to the fact that it is necessary for us to foster our own talent if we are to have a fair show and play a respectable part in the industrial campaign. This will be started in every foreign country before the last of our boys in khaki are home from abroad.

AMERICA'S GARDEN ARMY

A VIGOROUS campaign to enroll at least 3,000,000 children in the United States school garden army to increase the production of food next spring is already being conducted by the bureau of education of the Department of the Interior.

C. M. Weed, of Lowell, Mass., has been appointed regional director for the section including Washington, and probably will visit the city soon to get the local school authorities to interest the children in truck gardening for next year.

For the information of those who doubt that boys and girls are capable of adding to America's productive capacity, the Interior Department cites the following achievements of the school garden army during the past summer:

One million five hundred thousand boys and girls enrolled to do garden work; they cultivated a total of 20,000 acres of vacant land; 50,000 teachers received instruction in gardening through pamphlets distributed for the children.

When the movement was started last March President Wilson appropriated $50,000 from his special war fund to carry on the work for the first six months, and

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he has since made available $200,000 more for the next ten months. The movement has the two-fold object of increasing food production and training school children in thrift, industry and responsibility.

ARTICLES FROM ENGLAND

ELSEWHERE in this issue we are glad to begin a brief series of historical articles by William Bradburn, the head master of an English Municipal school, who has, for several years, been making a special study of the available records bearing on the teaching of the manual processes of industry in the elementary schools of England. Mr. Bradburn is a Master of Arts of the University of Manchester. He sent his manuscript to us at the suggestion of Joseph H. Judd, organizing master and inspector of manual training in Manchester, who is known to many of our readers.

Probably there has never been a time in the development of manual arts work in education when it was so important for educators to know the motives, the conditions, the results, the changes that have attended its history as just now. Knowledge of past work throws light upon present experiences and serves as a check and a guide for the future. We believe the articles by Mr. Bradburn will do this.

PROFESSOR GRIFFITH INVITED TO ILLINOIS

THE University of Illinois has asked Professor Ira S. Griffith of the University of Missouri to become the head of its new department of industrial education. The University is desirous of immediately developing teacher-training work under the Smith-Hughes law, and so needs Mr. Griffith at once. On the other hand, Mr. Griffith is in charge of the Training Detachment of Army Mechanics at Missouri, and that University cannot spare him this year, and thinks she cannot later. A compromise has been reached whereby Mr. Griffith was released from his work in Missouri from Sept. 16th to Oct. 16th to organize the Course for Teachers of Machinists' Apprentices in Chicago. This course is being conducted by the University of Illinois in cooperation with the Board of Education of the City of Chicago, and is under state and federal supervision. Mr. Griffith will have one full-time assistant

IRA S. GRIFFITH

in charge of this new course; the other instructors will be on part-time and will be taken from the staff of the Chicago schools. All the instruction will be given in the evening from 7:15 to 9:15. After the work is once organized, Mr. Griffith will visit it occasionally during the school year.

The state of Missouri, not to be outdone by Illinois, has inaugurated similar work under the direction of Mr. Griffith at Kansas City, and may do the same in St. Louis before long. If Mr. Griffith does not have a strenuous year, it will not be the fault of the two Universities that are competing for his time and efficiency in training teachers.

Mr. Griffith is one of the few men in the field of industrial education who was a college professor of an academic subject before becoming a teacher of manual arts. After leaving the trade of a carpenter he obtained a college education and advanced

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in teaching until he became the professor of mathematics at Eureka College. Then he had a change of heart; he wanted to teach woodworking. After spending a year of Mondays at Bradley Institute he became the instructor in manual training at Oak Park, Ill. While here he wrote his first two books, *Essentials of Woodworking* and *Correlated Courses in Woodwork and Mechanical Drawing,* studied at Lewis Institute in evening classes, did correspondence work at the University of Chicago and wrote numerous articles for technical journals. Then for two years he was assistant professor of manual arts at Bradley Institute, developing strong courses for teachers. From this work, he was induced to go to his present position at the University of Missouri. Since then he has written three more books, *Woodwork for Secondary Schools, Woodwork for Beginners* and *Carpentry* and has lately devoted the same insight and energy to the application of modern psychology to the everyday problems of the teacher of manual arts subjects. The effective work he did with the staff of manual training teachers in Kansas City last year is proof of his capacity in this direction. There is great need of more of the kind of work Professor Griffith is doing.

MR. BAUERSFELD'S PROMOTION

THE Chicago Board of Education has done well in appointing Albert G. Bauersfeld to the position of supervisor of manual training in the high schools of that city. Mr. Bauersfeld thereby receives a deserved promotion and the public schools retain the services of one of the most progressive among the younger men in the profession. Mr. Bauersfeld has won his popularity by giving himself unsparingly to his work, by taking a big view of problems as he has met them, and especially, perhaps, by his fine comradeship and his never failing confidence that the thing that ought to be done can be done.

Mr. Bauersfeld is a graduate of the Chicago English High and Manual Training School, now the Crane Technical School, and of Armour Institute of Technology, where he received the degree of Bachelor

ALBERT G. BAUERSFELD

of Science in Industrial Arts. He has been a student of the Chicago Normal School and the University of Chicago, and has worked as a journeyman carpenter and as a practical pattern maker.

For two years he was an instructor at Stout Institute, and for a similar period at the Chicago Normal School. For the past twelve years he has been a teacher of pattern making at the Lane Technical School. During a part of this time, he has also taught carpenter apprentices. For three summer sessions, he was an instructor in the Department of Manual Arts at the Ohio State University, and he did similar work one summer at Lane, when that school sent thirty young men to Porto Rico to teach manual training under the War Department.

Mr. Bauersfeld was the efficient president of the Illinois Manual Arts Association in 1915-16. Later, he was the secretary of the Vocational Education Association of the Middle West, and at the pres-

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ent time he is the president of that organization.

JOBS—OPPORTUNITIES

REPORTS of vocational education surveys have emphasized the fact that entrance upon favorable terms into many desirable occupations is denied to young persons under 18 years of age, but certain of the conclusions based on this and other facts require further scrutiny. While it is true that the great majority of the occupations open to the youth of 14 to 16 years of age are necessarily unskilled, it does not follow that these occupations are beneath the notice of framers of a vocational education program. Careful analysis will show that many of these apparently trivial and unpromising "jobs" represent real opportunities for capable and energetic boys and girls to gain a foothold in the industrial or commercial world, from which to climb to better things. Given a foothold, the only remaining indispensable conditions for advancement are: ambition, organization of industry in such a way as to facilitate promotion, and education to fit for greater responsibility. The first of these may be stimulated, but rests largely with the individual. The second and third are conditions which it is the business of vocational education to help bring about regardless of the occupational status of the individual.

WASHINGTON CORRESPONDENCE

WASHINGTON IN WAR TIMES

It is a rare privilege to be living in Washington in these stirring times. Many persons who have come recently, however, find it a privilege with some drawbacks. A few days ago a man came into my office who said he had called at seven hotels before he succeeded in finding a place to stay for the night. Last week a friend of mine was sent here to take charge of the Washington office of a New York engineering concern. After spending two days looking around he told me he was obliged to return to New York and report to his company that it will be necessary to purchase a home for him here if he is to stay.

Down in the Union Station Plaza, in the vacant space opposite the Y. M. C. A. Liberty Hut, the Housing Commission is erecting a group of dormitory buildings which will accommodate probably 5,000 government workers. Another similar project is to be located near the new Navy Department building in west Potomac Park. The new Wardman Park Inn, a high class apartment house, is to consist of a group of ten buildings, each containing one hundred apartments. Three of these units are now nearing completion, and a fourth is well under way. I am told that every apartment in these four buildings has been let for some time. Architect's plans were completed recently for another large apartment house in Mount Pleasant, overlooking Rock Creek Park. Every apartment was leased, from the plans, before the contractor started his steam shovel to work on the site.

A very energetic rooming commission has succeeded thus far in finding rooming places for all government employees who have come, tho the congestion has been noticeable for months past. It is estimated that there are upwards of 90,000 civilian employees in the government service now in Washington, in addition to officers and men in uniform. Of these, perhaps one-half have come to us within the past eighteen months.

The problem of feeding this multitude has been a very serious one also, tho the situation has been materially relieved by the

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cafeterias and lunch rooms opened in the various government buildings.

The appearance of the streets of Washington has completely changed during the past three years. Thousands of people, unable to get on the street cars, walk to work every morning and back home in the evening. From eight until nine the sidewalks of certain streets are choked with veritable processions. This is especially true of such streets as 14th, 16th, 18th, and Connecticut Avenue, leading from Mount Pleasant and the northwest residence section directly to the office district. Throngs of hurrying walkers pass the White House on Pennsylvania Avenue every morning, on their way to the State, War, and Navy Building at the corner of 17th Street, and the new Interior Department building and the new "temporary" buildings of the Red Cross, Council of National Defense, Food Administration, and others, located just to the west and south of this busy corner.

With all the hurry and crowding, however, the very atmosphere seems charged with a spirit of patriotism and devotion. While there is grumbling against profiteers who are supposed to be taking heartless advantage of the unusual conditions, and while there is doubtless much hardship and some real suffering, most people in Washington seem to be doing the best they can under the circumstances, and for the most part good-naturedly. For are we not all, with you who are scattered all over the country, serving shoulder to shoulder in the greatest cause for which a nation ever enlisted? And what are the inconveniences we are asked to meet compared with the sacrifices made by "our boys?" And, besides, *the news from "over there" has been fine lately!*

The American school will never serve its true democratic purpose until it gets rid of marking time by the superior pupils in order to keep them in close association with inferior pupils. It will never do its best for the Democracy until it enables each pupil to advance as rapidly as his individual powers permit. Nobody need fear that a proper classification of the pupils in the public schools will introduce any undesirable class distinctions. In the select body of superior pupils there will always be found children of the poor and the well-to-do, of the native and the alien, of the mechanic, the farmer, the clerk, the shop-keeper, and the operative.—Charles W. Eliot, President Emeritus, Harvard University.

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SHOP NOTES AND PROBLEMS

ALBERT F. SIEPERT, Editor

CHRISTMAS TOY PROBLEMS

THIS year, when toy manufacturing is under the ban, the boys and girls will have to make most of their own toys, or make them for each other. They will be glad to do this "as a war measure" and the toys will be worth more to them for the effort.

Teachers will do well to begin this work a little earlier than usual so as to avoid the rush of work just before Christmas. Before they begin they will get into the spirit of the work better, and see more of its possibilities if they will take down their bound volumes of the MANUAL TRAINING MAGAZINE and read the following references:

The School Shop and the Christmas Spirit, Vol. XIII, p. 97, and Vol. XVI. p. 244.

Christmas Toy Repair Shop, Vol. XVI, p. 245.

Another Santa Claus Shop, Vol. XVI, p. 249.

Christmas Toy Making in Seattle, Vol. XIX, p. 144.

Repairing Toys at the Francis W. Parker School, Vol XIX, p. 147.

If the teacher wants further help, we suggest that he look up the following:

(a) Toys made with the coping saw as the principal cutting tool.
Coping Saw Work, Vol. IX, pp. 397-411.
Coping Saw Work with an Added Interest, Vol. XVIII, pp. 136-139.
A Toy Menagerie, Vol. XVIII, pp. 292-294.

(b) Toys made with the knife as the principal cutting tool.
Kites, Vol. X, pp. 200-221.
Happy Jack Windmill, Vol. IX, p. 299.

(c) Toys made with the ordinary bench outfit of woodworking tools.
Marble Game Board, Vol. I, p. 189.
Hygroscope, Vol. VIII, p. 247.
Boat, Vol. IX, p. 303.
Circus Parade, Vol. XIV, p. 20.
Windmills, Vol. XIV, pp. 379-380.
Wagon, Vol. XV, p 413.
Toy Carts, Vol. XVIII, p. 435.
Topsy Turvy, Vol. XIX, p. 151.
Toy Dog, Vol. XIV, p. 185.

(d) Toys made in part with the wood-turning lathe.
Marble Puzzle, Vol. XI, p. 191.
Wondergraph, Vol. XVI, p. 56.
Puzzle, Vol. XVI, p. 586.
Toy Duck, Vol. XIX, p. 183.

(e) Toys involving metal working.
Sled, Vol XV, p. 149.
Hero's Engine, Vol. XVI, p. 455.
Steam Turbines, Vol. XVI, pp. 256-257 and 518-521.

PUZZLE

THE accompanying puzzle and coat hanger problems were contributed by E. F. Juergens of Middletown, Ohio.

The three-piece coin puzzle is easily made from small scraps of walnut or other close-grained wood. In case the pupil lacks the skill to make the middle member from one piece of wood, he may saw off part of the front member and glue it to the middle member.

When the two coins are in the pockets, and the puzzle is closed, they are locked in by the washer, provided the washer has fallen into the middle piece, as it must do when the puzzle is closed and placed horizontally with the diagonally-cut piece uppermost. If, however, the puzzle thus closed is turned upside down the washer drops into the space in the front or diagonally cut piece. Now if this piece is swung around a little, as in the illustration, the washer is taken away far enough to allow the bolt to slide in the slot, which means that the middle piece is released, and may be slid around so that the coins become exposed or will drop out. To open the puzzle in such a way as to mystify the audience, open the puzzle only just enough to get the washer started around on its journey and then turn the puzzle over, thus finishing the process in a position in which it cannot possibly be begun.

COAT HANGER

This drawing shows one-half of the project. The idea is to avoid the cross-grain found in the coat-hanger made of one piece, and to be able to economize on lumber by making the project out of narrow strips instead of the wide board usually needed. The two halves are made to fit each other and fastened together by means of wood screws.

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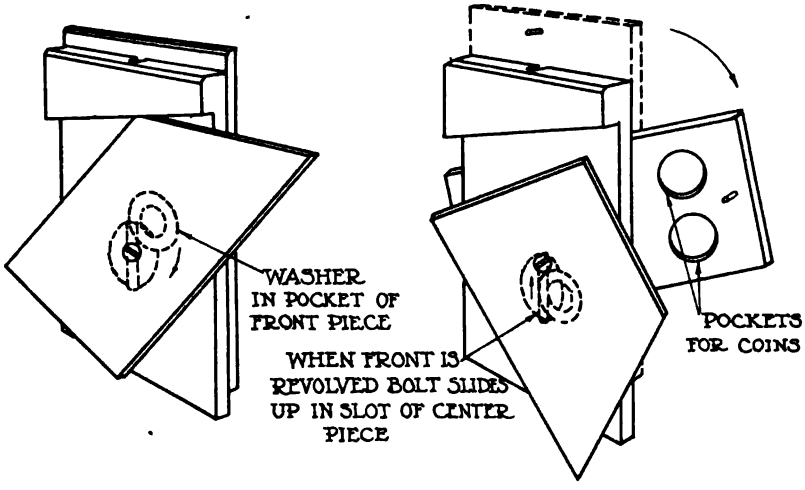
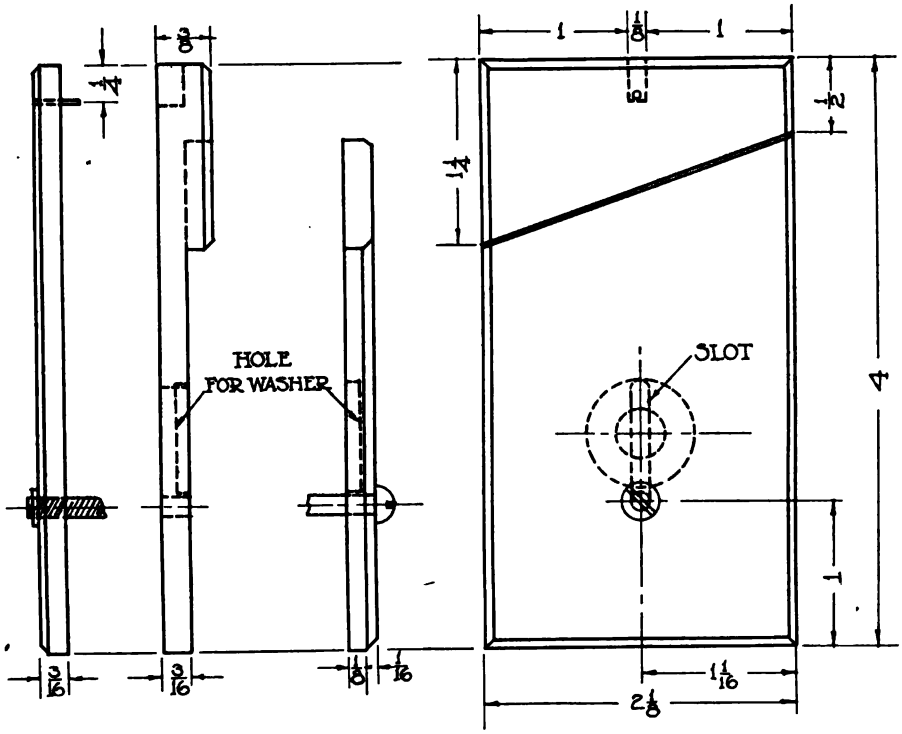
PUZZLE





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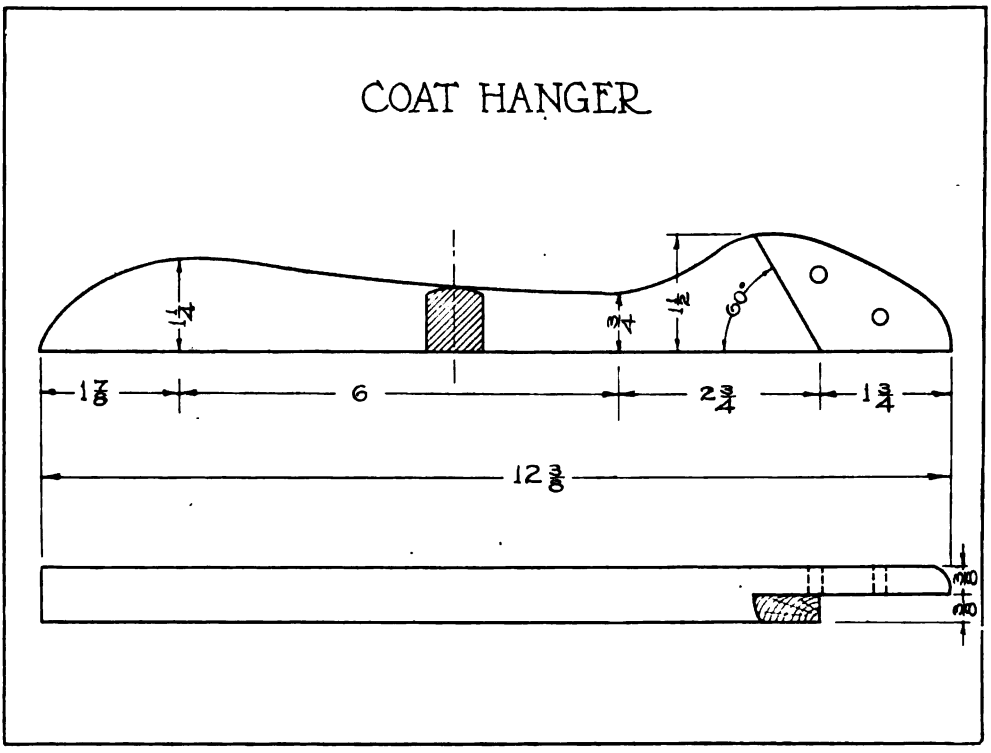

WINDOW WEDGES

If the reader has ever risen from a warm bed to stuff little wads of cardboard in between the window frame and the sleep-shattering rattle-te-bang sash, he will realize the practical value of having handy a few little wooden window wedges like the ones illustrated.

They are designed not for any artistic purpose in putting before children examples of correct drawing to be reproduced, but are obviously exaggerated and made grotesque in a pure spirit of fun; and the only instructive value claimed for them is manual practice in sawing and painting the design.

The designs are painted upon the sawn and tapered form in some opaque paint medium. Ordinary white enamel paint mixed with oil colors makes a good medium; or water colors, mixed with Chinese white into a tone of cream-like thickness, will do well. In the latter case it is well to coat the finished design with varnish.

Certain shading lines appear in the illustrations to indicate colors used. The diagonal-line surfaces indicate grey (pale greenish or bluish grey on Kaiser's face); the vertical lines red, and the horizontal lines on the dog, a brown color. The other black lines and surfaces which should not be confused with the shading lines are in all cases rendered in black. All white surfaces in the illustrations are executed in white, except the Kaiser's face which should be a flesh tone reddened slightly on the nose and the middle of his cheek, and the design on his helmet which should appear in a yellow or golden tone.

The degree of taper to be whittled into the "business-end" of the wedge properly depends upon the width of the crack in the particular window for which the wedge is to be used, but it is safe to say that the wedge should broaden very rapidly as it is impossible to insert to a length of more than about half an inch.

W. B. HUMPHREY,
Bradley Institute.

TOY WHEELBARROW

This is a seventh grade project. The sides are made of two pieces of stock, each ¾"x9"x2" in size. The wheel is cut from ¾" stock, and turns on a ½" dowel. It is kept in place by two blocks glued on the dowel. The construction of the remainder of the project is evident from the drawing.

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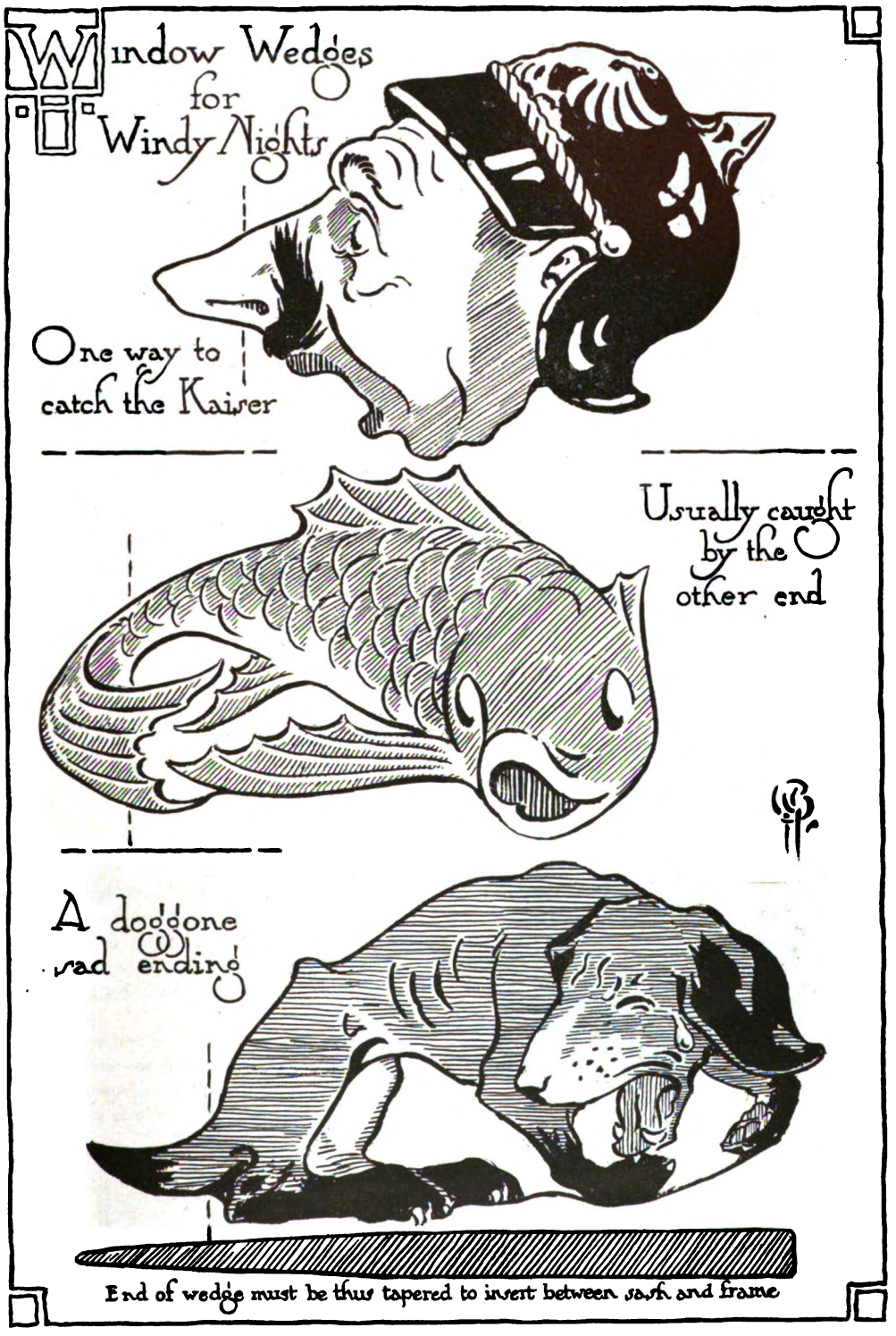
Window Wedges for Windy Nights
One way to catch the Kaiser
Usually caught by the other end
A doggone sad ending
End of wedge must be thus tapered to insert between sash and frame

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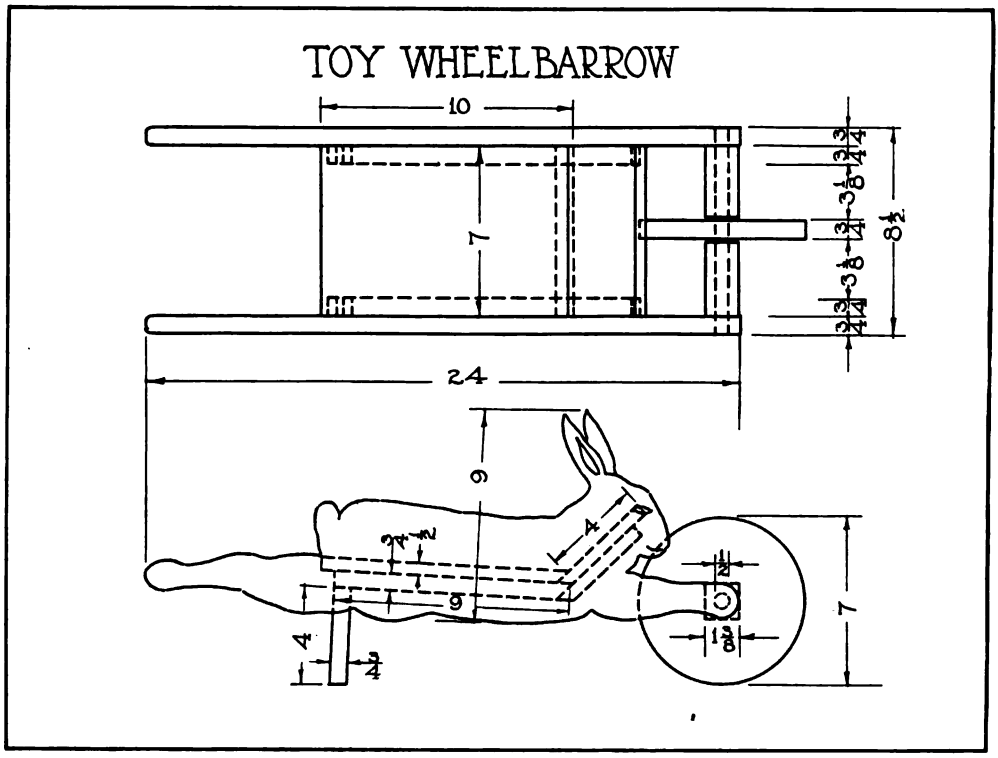
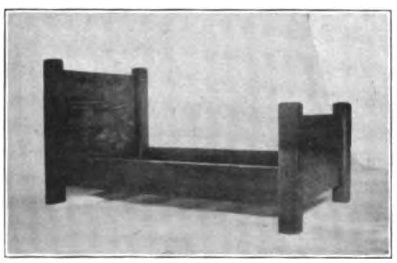


DOLL BED

This bed was designed for large dolls where strength, simplicity and neatness was especially desired. The ends are glued up first; then the sides may be fastened together with the bottom



slats. As soon as the glue is dry, the ends and sides are fastened together with 3" No. 12 Blued screws.

Any soft wood, such as pine or cypress, is very satisfactory material to use; the more skillful workman would make the bed of oak.

H. H. HARRISON,
Marshall, Michigan.

MENDING RULING PENS

The boy either unscrews the handle so often that the threads become stripped or he accomplishes the same result by screwing the handle too tight. In these days of scarcity of drawing instruments it is sometimes worth while to know how these can be permanently repaired.

Ordinary flake orange shellac can be placed in a cloth or sack and immersed in hot water for a few minutes, softening the shellac and making it possible to roll the mass while yet in the cloth into pencil form.

When cool the pencil may be removed and the end slightly heated, in much the same way as sealing wax, a small portion dropped into the socket of the pen, the handle quickly inserted and a permanent job is the result.

B. E. WING,
LaSalle, Ill.

I'd like to know why Doctor Jones
Continues his complaining
Because so many boys enjoy
Their work in manual training.

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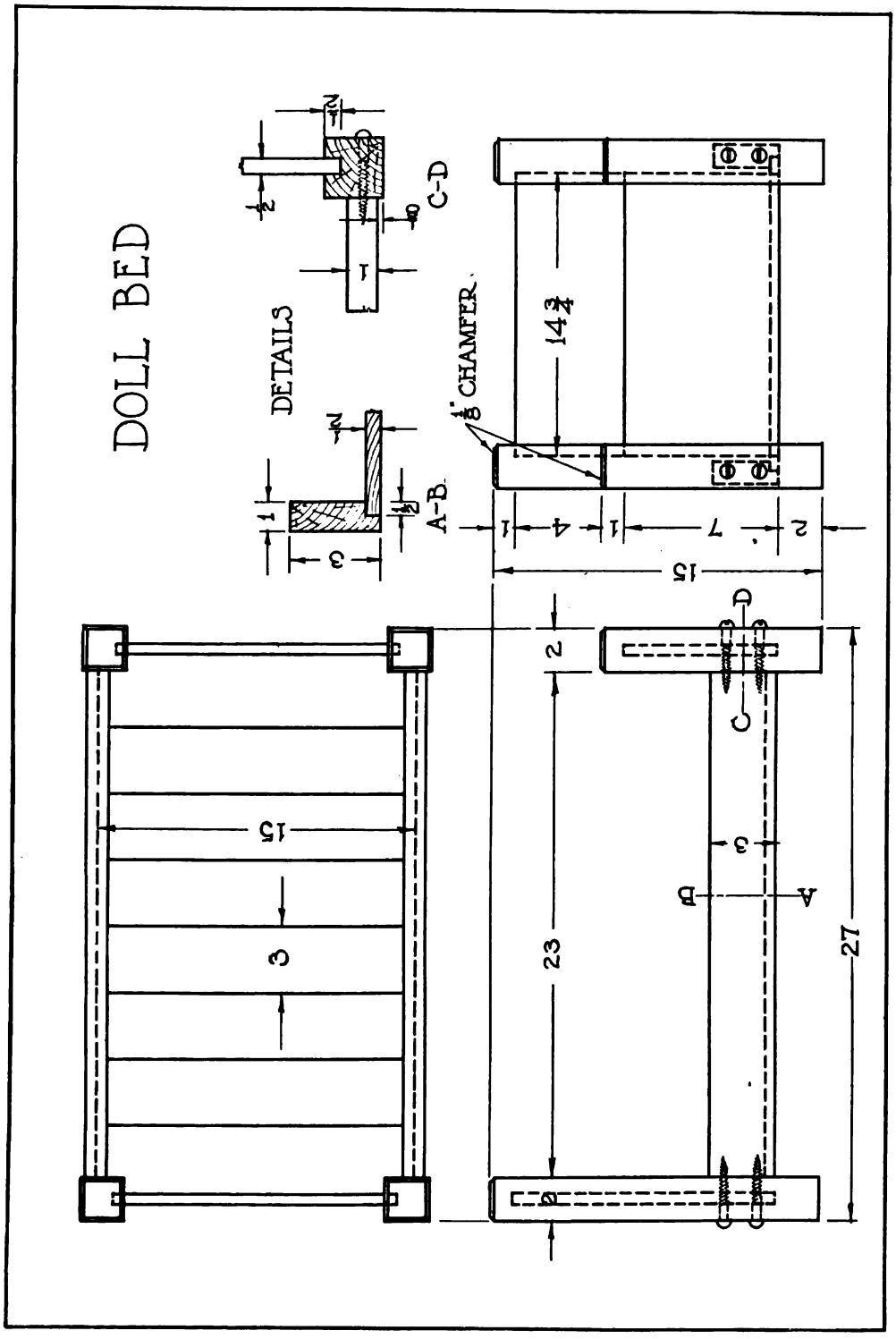

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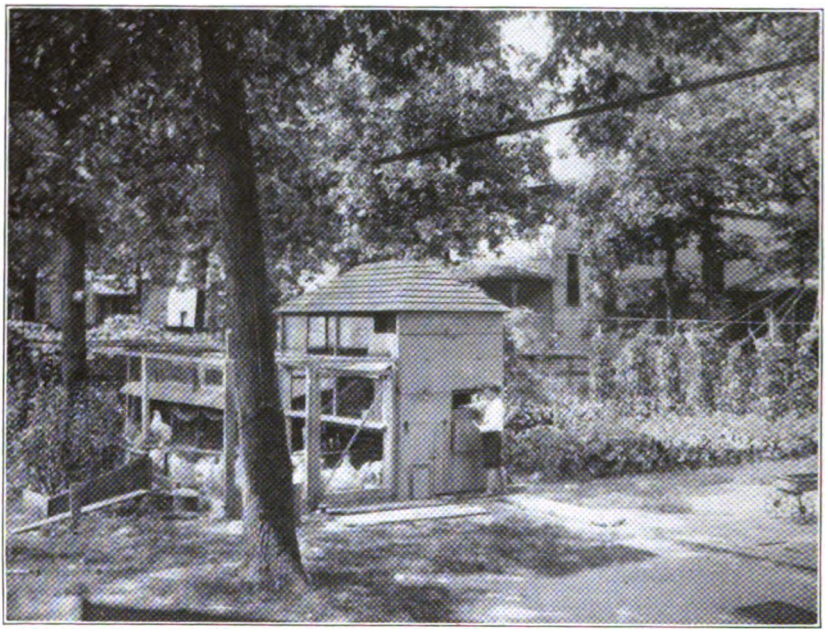
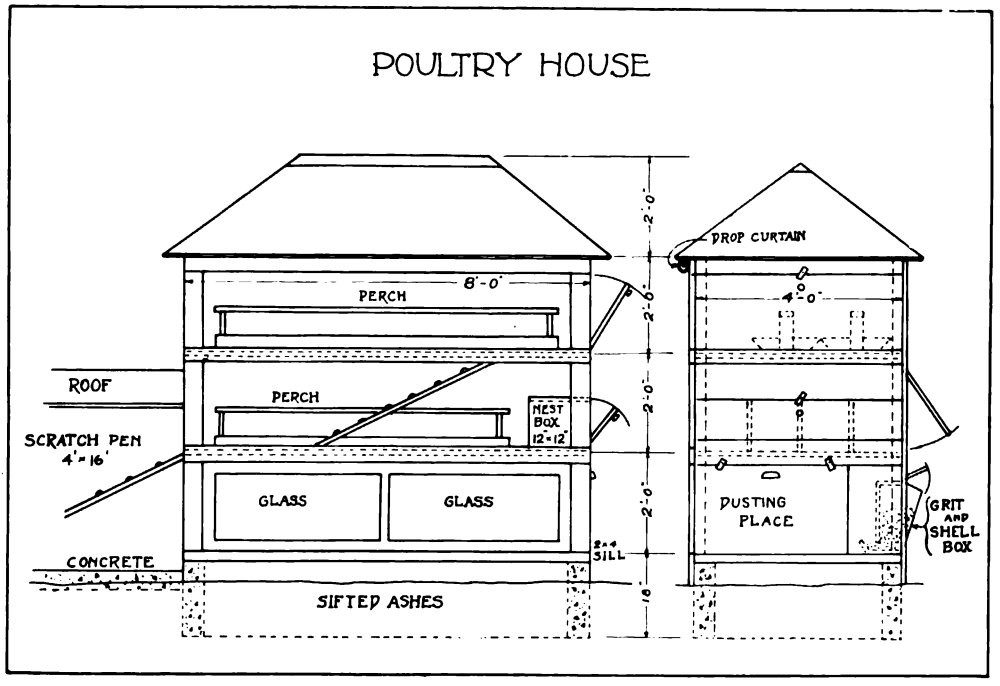


A Conservation Poultry Plant



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A CONSERVATION POULTRY PLANT

This title is given the poultry house represented in the accompanying photographs and drawing because it shows a house and yard which will care for fifty fowls in a most convenient and economical manner. For five years it has been the home of a large number of White

CLEANING A ROOST TRAY

Leghorn hens which have been a constant source of pleasure and profit to their owner. The house itself, 4x8 ft., has three stories 24 inches apart. The ground floor contains sifted ashes and is glassed in in winter. Here are placed boxes for grit and oyster shells. Passing up a slanting runway the fowls come to the second floor where are located four 12x12 in. nest boxes and also two roosts. The top floor contains four roosts, resting on trays, which can be easily removed by letting down doors on the north side of the house.

The south side is always open, but drop curtains are provided in case of very cold weather.

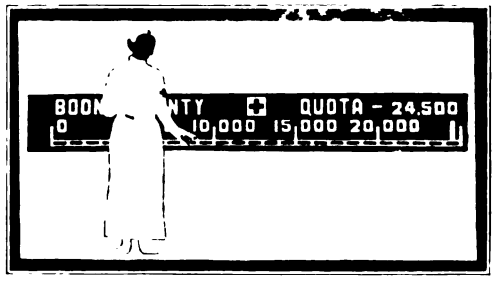
The yard consists of a covered scratch-pen, 4x16 ft., having a cement floor with plenty of straw or litter to scratch in. Adjoining is a 6x24 ft. open runway which with house and scratch-pen give an area of 240 sq. ft. The cost of this plant, including fencing and paint, is $25.00 which of course does not include labor.

GEORGE G. GREENE,
Highland Park, Ill.

RED CROSS MARKER

The Red Cross marker was constructed by the University of Missouri manual arts department, the idea and board worked out by a member of the mathematics department, and the nurse painted by a member of the art department. The nurse was made full size and the marker was placed on the main street down town. It was used in raising the Boone County Red Cross Second War Fund. The nurse is constructed of wall board, cleated on the back so that it can be moved along the scale as the contributions come in. The idea was to get a marker different from the usual thermometer and clock, yet equally as effective.

—IRA S. GRIFFITH.



RED CROSS MARKER

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CURRENT PUBLICATIONS

Comité Nacional Brazileiro do Primeiro Congresso Americano da Creança, Rio de Janeiro, Brazil 1917.—Imprensa Nacional.

Of special interest at this time when war is bringing us into closer touch with our great ally of South America, is this report of the work of the Brazilian committee in the American Child Welfare Congress held in Buenos Aires in 1916. The papers in this report cover all phases of child hygiene, institutional care and education, but the paper that directly concerns the field of interest of this magazine is that entitled "Vocational Education in Brazil" by Coryntho da Fonseca, director of the Trade Institute Sousa Aguiar in Rio de Janeiro.

Sr. da Fonseca first outlines the history of the vocational education movement in Brazil, showing that the same old conflict between the "practical" and the "cultural" camps has been more prolonged and intense in Brazil than here, and that the notion still very largely holds ground that manual education is only for the very poor and unfit in spite of having to fight against heavy odds. Still there have been actually established in Brazil 60 institutions of practical education including a certain number in which the trade department is in the nature of a charity. During the administration of Nilo Pecanha there were created the Schools of Trade Apprentices, one for each state and in these, the author states there is gradually coming to the fore the idea of a general basic shop course and general education combined with technical proficiency. The author emphasizes the need for a basic instruction in the three R's and in the fundamentals of all industry preceding specialization in any one trade.

A questionnaire which the author has sent out and the results of which he appends to his paper, yields interesting data in regard to the various types of vocational schools. The discussion of this data led the author to make the following conclusions:

(1) A trade school, especially if maintained by the state, should provide, not a special preparation for a selected trade, but a technical education which will guarantee to the student the greatest possible economic liberty and the best pledges of economic and social success.

(2) The so-called trade instruction which directly follows primary instruction should not only have in view the formation of elements of industry, but must be in itself an element of general education that the preparation of the citizen may better meet the social needs of a democracy.

(3) Technical instruction should be based on sound pedagogy and should avoid the empiricism of imitative adaptation. Construction should follow explanation and *comprehension.*

(4) All work in the shops whether simple technical exercises or advanced projects should be exclusively the work of the pupil only guided by the instructions of his teacher.

(5) The proceeds from a trade school should never be considered from the commercial viewpoint alone. The value to the pupil of the work he has done and his progress in his apprenticeship are after all the important outcome of the school.

Sr. da Fonseca makes a special point of this last conclusion because he has found a tendency in certain of the Brazilian schools to turn the school into a commercial factory whose aim seems to be to furnish income for the state. This is a danger which obtains wherever trade schools are newly established and is not limited to Brazil.

The limits of a brief review forbid further details from this interesting report, but enough has been given to show that our sister republic to the South is fully awake to the varied problems of vocational training and that with such a sagacious and far-seeing leader as Sr. da Fonseca we may expect sound and progressive developments in the future in Brazilian education.

—V. E. WITHEY.

RECEIVED

Lessons in Community and National Life. Series A, for the upper classes of the high school. Prepared under direction of Charles H. Judd, director of School of Education, University of Chicago, and Leon C. Marshall, dean of School of Commerce and Administration, University of Chicago. Published by the United States Bureau of Education in cooperation with the United States Food Adiministration. Contains excellent material for stimulating intelligent enthusiasm for the United States; aims to bring into schools a knowledge of the development of industry, and to create a sense of the personal responsibility of each individual in all his relations to society.

History of Public Education in Arizona, by Stephen B. Weeks. Bulletin No. 17, 1918. Published by United States Bureau of Education, Washington, D. C.

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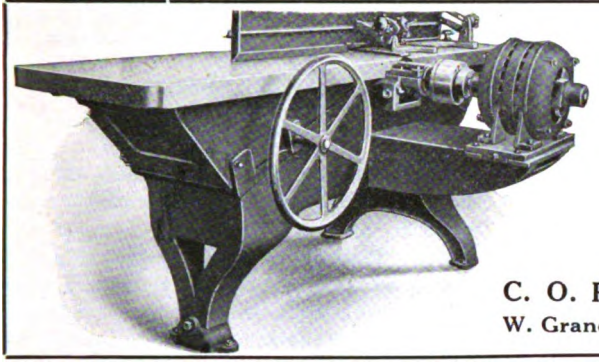

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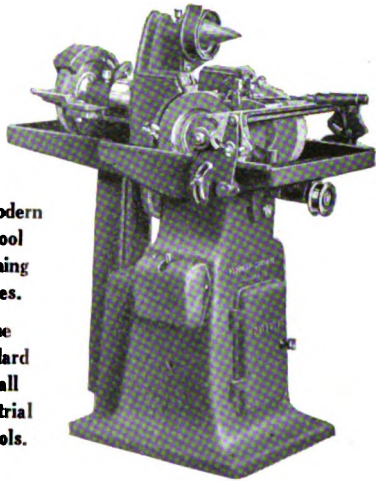

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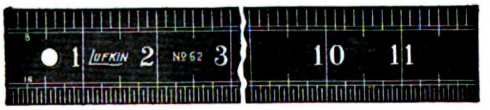

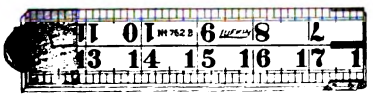

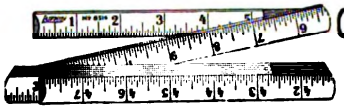

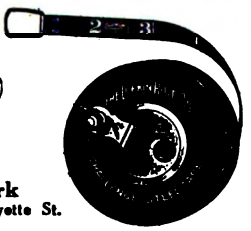

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FIELD NOTES

(*Continued from p. X.*)

Boys' Work and the Red Cross—W. W. Mitchell, Supervisor of Boys' Work, Northern Division, American Red Cross.

War Training and the Public Schools—George M. Brace, supervisor of manual training, St. Paul.

Vocational Training under War Conditions—H. W. Kavel, acting director, Dunwoody Institute.

FRIDAY AFTERNOON, NOVEMBER 8, 2:00 P. M.

General Topic: Reconstruction.

The Industrial Department of the Public Schools and Reconstruction—John N. Gills, assistant superintendent in charge of vocational education, Minneapolis.

Service—R. T. Hargreaves, principal, Central High School, Minneapolis.

The Certification of Teachers under the Smith-Hughes Act—S. A. McGarvey, State supervisor of trade and industrial education.

Clarence E. Howell, supervisor of manual training at Jacksonville, Florida, last year, has accepted the position of supervisor of boys' vocational work in Lincoln, Nebraska.

The board of education at Jacksonville have begun an extensive building program. All the frame school buildings which they have been using for years are being torn down and replaced with modern brick and concrete structures, costing from $50,000 to $75,000 each, according to the number of grades to be accommodated. All the schools having seventh and eighth grade work have a large auditorium with stage and moving picture booth, a clinic room with boys' and girls' dressing rooms adjoining, a library, domestic science room with dining room, and a manual training shop with lumber and storage room attached. Furthermore, every shop is centrally located, with good light and ventilation, and entirely above ground.

Eight of these fine new buildings were opened in the Fall of 1917, and Mr. Howell had the unusual pleasure of equipping all of them. This gave him a rare opportunity to carry out some of his chosen ideas. For example, every boy was provided with his own plane blade, each shop was equipped with individual lockers, a

(*Continued on p. XV.*)

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FIELD NOTES

(*Continued from p. XIV.*)

stain and glue bench, and a supply cabinet. The equipment in each shop was limited to 18 or 20 benches.

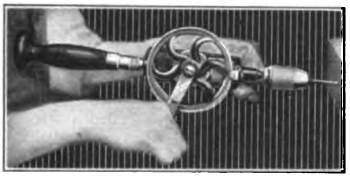
This was the beginning of grade work in manual training in Jacksonville, and Mr. Howell was able to secure a time allotment of three hours per week for the work.

From January, 1916 to June, 1918, the Central High School of St. Louis offered a four-year course in printing to printer apprentices from the composing rooms of the printing offices of St. Louis business firms. Each apprentice spent one day a week in the school, from 8 A. M. to 4 P. M. The boys came in groups of twelve to sixteen, five days in the week. The course consisted of two and one-half hours in typesetting, with such practice on the press only as was necessary for proving their work. The remainder of the day was divided between English literature, 1 period; elements of English (composition, punctuation, etc.), 1 period; drawing, two periods; civics, 1 period; bookkeeping and shop mathematics, 1 period. The same boys also spent two evenings per week, two hours each evening, in the school print shop.

The success of the work has resulted in a cooperative arrangement between the St. Louis board of education, the Ben Franklin Club (representing employing printers), and Typographical Union No. 8, whereby a two-year vocational course in printing is to be opened at Central High School. It will cover the subjects mentioned above. The benefits to be derived by the boys taking this course are: 1st, Two years schooling beyond the grammar grades; 2nd, Placement in the printing trade with credit of two years apprenticeship beginning with the third year salary.

The Art Institute of Chicago has offered a distinguished compliment to the teaching fraternity in inviting Dr. James P. Haney, director of art in the high schools of New York City, to give the next course of lectures under the Scammon foundation. The Institute indicates the keen interest which industrial art is eliciting at the present time by inviting Dr. Haney to speak on this topic. Six lectures will

(*Continued on p. XVI.*)



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Joseph Dixon Crucible Company

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Established 1827

FIELD NOTES

(*Continued from p. XV.*)

be given and these will subsequently be published in a volume by the Institute.

The Scammon foundation is perhaps the most noted art lecture foundation in the country. It was founded by Mrs. Maria Sheldon Scammon, and since its establishment in 1903 has had as speakers the foremost painters, sculptors and architects of America, including John LaFarge, Edwin H. Blashfield, John W. Alexander, Lorado Taft, and Ralph Adams Cram.

Miss Anne Davis, chief of the bureau of vocational education in Chicago, has gone to Washington to begin the work of making a study of vocational guidance and education in America for the federal children's bureau.

Her report, to complete which she has been granted five months' leave from her duties in Chicago, will be a summary of what each state is doing to keep its children in school, to assist them in finding suitable employment if they leave school, and to guide their industrial development.

Miss Davis who is a graduate of the University of Chicago and well known for her work in connection with vocational education, has undertaken the survey of what America is doing for its children in response to the request of Miss Julia Lathrop, chief of the children's bureau.

The training of teachers for trade schools has come to be an essential part of our industrial development. The State of Massachusetts has led in this work. For the past five years courses have been conducted in different centers thruout the state, where men who have had at least eight years' trade experience have been given an opportunity to come in and take a short, intensive course in the essentials and theory of teaching.

One of these classes has been opened at the Springfield Vocational School. Men who have had the necessary trade experience and a grammar school education, and who are between the ages of 20 and 40, are eligible.

With the idea of cooperating with the Federal Board for Vocational Education, an industrial survey to determine positions which may be open

(*Continued on p. XVII.*)

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FIELD NOTES

(*Continued from p. XVI.*)

to crippled soldiers and sailors has been undertaken by the Rhode Island School of Design. Among the manufacturers in Providence and vicinity who have already expressed their willingness to cooperate in every way possible in this work are the American Woolen Company, the American Silk Spinning Company, B. B. & R. Knight Company, the Wanskuck Company and the Solway Dyeing and Textile Company.

Under the auspices of the Education and Training Section of the United States Shipping Board, Emergency Fleet Corporation, the Massachusetts Institute of Technology is arranging to convert young engineers and architects into naval architects and shipbuilders to aid in designing and constructing vessels for America's great fleet of merchant ships. As the supply of technically-trained men is not sufficient to meet the demands of the shipyards, the Institute will increase the supply in a ten weeks' course of instruction which began September 30, at Cambridge, Mass.

Columbia University is also offering an extension course in ship drafting. It is designed to prepare for United States Civil Service examinations for ship draftsmen. There will be three grades of instruction, beginning with mechanical drafting for those unfamiliar with the instruments and methods, followed by a first course in ship drafting and then a more advanced course in the same subject. Each course covers a period of twelve weeks.

As a war necessity the idea of organizing schools in factories is growing rapidly. For the purpose of instituting mechanical training schools in the factories of Detroit, Mich., James M. Teahan, Wayne County director of the United States public service reserve, in company with ten workers, made a tour of the local factories sometime ago. A number of factories were already conducting such classes, notably the Packard, Lincoln Motor, Automatic Products Company, and the Ford Motor Company.

An intensive course for tracers in the drafting department of Carnegie Institute is meeting a needed local demand. The first class,

(*Continued on p. XVIII.*)

Wiley Shop Texts

Principles of Mechanism.

By Walter H. James and M. C. Mackenzie, Massachusetts Institute of Technology.
The Wiley Technical Series.

Adapted for use in evening technical schools, trade schools, mechanic arts high schools, and others where it is desired to teach this subject thoroughly yet without going into the highly mathematical treatment. Typical problems are solved and a large number are included for solution by the student.

v+241 pages. 5¼x7½. 192 figures.
Cloth, $1.50 net.

Practical Shop Mechanics and Mathematics.

By James F. Johnson, formerly Superintendent of State Trade School, Bridgeport, Conn.
The Wiley Technical Series.

Based upon a teaching experience of nine years, the notes included in this book present in a concise and clear manner those simpler branches of applied mechanics, and the mathematics directly related to them, that pertain to actual shop conditions.

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Cloth, $1.00 net.

Elementary Practical Mechanics.

By Joseph M. Jameson, Vice President, Girard College; formerly Head of the Department of Physics, School of Science and Technology, Pratt Institute, Brooklyn, N.Y.
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Conveys not only a knowledge of facts and of fundamental theory, but also some training in ability to apply such knowledge. Designed primarily as a text for elementary technical and manual training schools.

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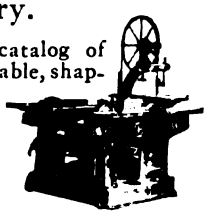

The Crescent Machine Co.

46 CHERRY ST. LEETONIA, OHIO

FIELD NOTES

(*Continued from p. XVII.*)

consisting of 28 girls, were all promptly placed with Pittsburgh firms at salaries ranging from $65 to $75 per month. Of the second class, three girls were employed by one of the railroad companies at $100 per month. Clarence E. Hedden, assistant professor of vocational education, has charge of this work.

Under the administration of the Department of Extension Teaching, Columbia University is offering a course of instruction in military concealment or camouflage covering a period of twelve weeks, ending December 21, 1918. Artists and mature students in various branches, painters, sculptors, architects, wood and metal workers, modelers, carvers, photographers, and others of allied qualifications are eligible for admission subject to the approval of the University. The course is open to men and women.

On September 2, Humboldt State Normal School, Arcata, California, began an active and extensive plan of supervision of the rural schools of northwestern California. One hundred seventy-two schools will be supervised by the faculty of the normal school. This number includes all of the schools in Del Norte, Trinity and Mendocino Counties, and thirty schools in Humboldt County.

This rural supervision work is being taken up with very definite plans and purposes in mind and with equally definite ideas of the results to be obtained.

The College of the City of New York is offering this year a course in vocational guidance which is designed to unfold the underlying principle of vocational education and vocational direction as applied to specific cases. The course is being given by I. D. Cohen, principal of Tottenville Evening Trade School.

The carpentry and concrete sections of the vocational unit of the S. A. T. C. at New Hampshire College, recently built in one day a farm machinery building approximately 60 by 20 ft. This building is one of several that have been built at this place by soldiers during the summer, a new mess hall being one.

(*Continued on p. XIX.*)

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FIELD NOTES

(*Continued from p. XVIII.*)

Pratt Institute is another institution to offer a practical course in building wooden boats and ships. The class meets from 7:30 to 9:30 three evenings a week for a period of twelve weeks. Classes will continue thruout the season.

Owing to the difficulty of securing skilled workers, the Brown-Lipe-Chapin Co., Syracuse, N. Y., well-known manufacturers of gears, have opened a school for apprentices and secured Charles W. Clark, of Syracuse, to take charge of it.

Newton Van Dalsem, formerly instructor in manual training in the high school at Davenport, Iowa, is now a staff instructor in the department of education and training of the United States Shipping Corporation. His field of activity is in the ship building yards at Portland, Oregon, where he is one of thirty teachers engaged in training 600 skilled mechanics to become instructors to thousands of unskilled men.

William A. Courchêne, who for four years was principal of the Rachel F. Harris Manual Training and Industrial School in Woonsocket, R. I., and two years director of industrial training in the same city, has accepted the position of assistant manager and engineer of the turbine department of B. F. Sturtevant Co., Boston. During the past year, Mr. Courchêne completed an instruction bulletin on the operation and maintenance of the V D-5 Turbo Blower, which is issued to officers on destroyers. He is now working on a similar bulletin for mine sweepers.

Royal B. Farnum, formerly director of art for the New York State Education Department, has been appointed superintendent of the applied and fine arts department at Mechanics Institute, Rochester, N. Y.

Miss Blanche Campbell, who has been assistant in the manual training department of the State Normal School, Winona, Minn., for the last two years, has accepted the position of industrial arts teacher in Atlanta, Ga. On account of the scarcity of teachers at present, no assistant may be secured to take Miss Campbell's place until after the war.

(*Continued on p. XX.*)

More than ever before, the manual training courses of schools and colleges are teaching modern mechanics. The well trained mechanic must know how to weld metals successfully, therefore every manual training department should be given the best equipment possible.

Economical, Efficient, Safe, Speedy and Durable. Portable and always ready for use. Welds anything in metal and cuts everything in wrought iron and steel.

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Fundamental Tool Processes in Woodworking

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1. It gives **all that a boy needs** to know **in order to do intelligent work** with the usual woodworkers tools.

The arrangement of type and paragraphing is such that the boy cannot dodge. The assignment can be made so clear that he can not pick out all the accidental and relatively unimportant matter in the book and learn that to the exclusion of the really significant material.

2. **The Reference and Experimental work** suggested **will greatly enrich the thought content** of the work.

There are in every class some real mechanical geniuses. They are the boys who will, if properly directed, become industrial leaders. They need to be kept busy up to their full capacity with worth while work. The book provides for them.

3. The **inattentive boy, the slow boy** and **the absentee will give the teacher** who uses this book **little trouble** and the boys will be grateful for its help.

4. **It has been enthusiastically endorsed by many users. Price 40c.**

The Manual Arts Press. Peoria, Ill.

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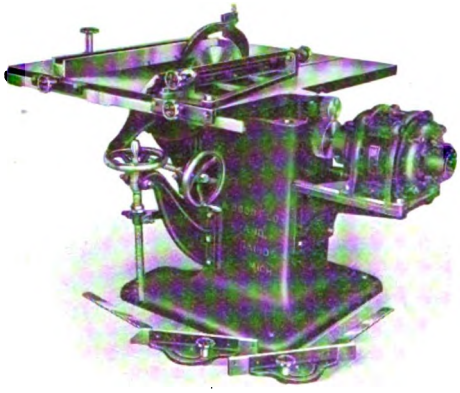

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BUFFALO, N. Y.
Manufacturers of
MACHINERY FOR WORKING SHEET METALS

FIELD NOTES
(*Continued from p. XIX.*)

Charles Marten, formerly principal of the Schwab Industrial School and director of vocational and prevocational education, Munhall, Pa., has been appointed associate professor of industrial education at the Agricultural and Mechanical College, College Station, Texas.

Edward S. Maclin, formerly head of the department of drawing, Technological High School, Atlanta, Ga., has been appointed professor of industrial education, University of Tennessee, Knoxville, entering on his new duties September 1.

William D. Parkinson, superintendent of schools in Waltham, Mass., resigned his position sometime ago to become agent of vocational education in the public schools of the state.

F. Theodore Struck has been appointed associate professor of agricultural education at the Pennsylvania State College, State College, Pa. Mr. Struck was formerly supervisor of vocational education for Essex County, New Jersey.

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TRADE NOTES

The Sebastian Lathe Company, Cincinnati, Ohio, have just brought out a new 10″ swing engine lathe which will be of sepecial interest to schools. In addition to the adaptability of this size to school needs, it is furnished with friction countershaft, steady and follower rest, compound rest, 5″ and 9″ face plates, and wrenches and gears to cut all standard threads from 3 to 40. The usual extras can be secured also if desired. A circular fully describing this new machine will be sent to readers interested.

TRAINING DETACHMENT CLASS USING ATKINS' "SILVER STEEL" SAWS.

The above is a picture of a Training Detachment class in carpentry. They are taking an intensive course covering a period of eight weeks. In addition to learning something of the art of building, including mitreing and splicing, they are learning also how to repair quickly and efficiently such important things as gun carriage spokes and airplane parts that are made of wood. This particular shop is equipped thruout with Atkins "Silver Steel" Saws.

One of the best equipped firms for furnishing art metalwork tools and supplies is the Belcher & Loomis Hardware Co., Providence, R. I. Their present catalog of this line includes not only the major equipment for sheet, brass and copper work, but it also lists the needfuls for jewelry work. They were one of the first firms in the country to cultivate the school trade in this field.

Teachers desirous of securing cushions and other upholstery supplies will be interested in learning that The Dodge-Dickinson Co., Bloomington, Illinois, are prepared to furnish everything in this line. They are manufacturers of a well-known line of mattresses, couches, pillows and box springs, and have recently extended their line to include furniture upholstery supplies.

To most people a lead pencil is just a lead pencil—nothing more. However, to those to whom a lead pencil is a tool in their daily work, there is a great difference. This fact is well brought out in the pamphlet entitled "The Venus Pencil in Mechanical Drafting," issued by the American Lead Pencil Co. The booklet was written and the illustrations made by Harry W. Jacobs, director of drawing, Buffalo, N. Y. An intricate drawing of a Howitzer shell and a topographical drawing, each made with pencils of varying hardness as the case demanded, are interesting examples of the use of the correct pencil for a given piece of work. The booklet will be sent to readers requesting it.

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BOOK NOTES

Teachers offering courses in naval architecture will be glad to learn of *Handbook of Ship Calculations, Construction and Operations,* by Charles H. Hughes, published by D. Appleton & Co. As the title states, the book is distinctly a handbook, and to the student, offers a wide collection of practical data in convenient form. It is of special value for reference use to all interested in ship building and operation. It contains 740 pages with numerous diagrams and tables and is bound in flexible leather. Price $5.00.

Users of *Mechanical Drafting,* by H. W. Miller, will be interested to know that Professor Miller is now Captain Miller and that he is serving his country in the Ordnance Department of the American Expeditionary Forces "somewhere in France." The presses are now running the fifth edition of Captain Miller's text, which is having a greatly increased sale owing to its use in schools training war mechanics. The increased cost of production and materials has made it necessary to advance the price to $2.00.

With the continuous increase in costs of all materials entering into the manufacture of books, there is an increasingly upward trend in prices. Many books have already been advanced; many more are due to advance as new editions are published. It is safe to predict that never again, at least for a number of years, will books be as cheap as they have been.

Among books of special help to teachers of manual training, but not so well known is *Automobile Welding With Oxy-Acetylene Flame,* by M. Keith Dunham, published by Norman W. Henley Publishing Co. With the wonderful advance being made in this field in the industries, and the emphasis now being given to this subject in the war mechanics courses, books on this subject are timely. While this volume is not new (originally published in 1916) it is, nevertheless, one of the most helpful books available. It is a practical treatise and deals particularly with the repairing of automobiles by welding. Chapters are devoted to "Apparatus," "Shop Equipment," "Cast Iron," "Aluminum," "Steel," "Malleable Iron, Copper, Brass, Bronze," "Carbon Burning and Other Uses of Oxygen and Acetylene," and "How To Figure Cost of Welding." The price of the book is $1.00.

Soft Soldering, Hard Soldering and Brazing by James F. Hobart, published by D. Van Nostrand, will interest teachers of metal work, and woodworking teachers also, at least to the extent of "brazing a band-saw." Price $1.00.

Already the literature on aeroplanes and aeronautics is rapidly growing and quite as rapidly changing, due to the wonderful development since the beginning of the war. A timely book on this subject, published at Dunwoody Institute, is *Aeroplane Construction and Assembly* by King and Leslie. This book is essentially an "instruction manual" and a "guide to aviation instructors." It is well illustrated and is probably the first book in this field which is written from the school text point of view. The price is $1.50.

Aeroplane Designing for Amateurs by Victor Laughed, published by Lee Reilly & Britton Co., devotes considerable space to the theory and principles underlying flight by heavier-than-air machines. It is a valuable book for reference use to teachers who are interested in aeroplane tournaments. (Price, cloth, $1.00; Morocco, $1.50.) Another such book published several years ago (1911) which should be mentioned in this connection, is *The Second Boys' Book of Model Aeroplanes* by Francis A. Collins, published by The Century Co. It is well illustrated with many types of model aeroplanes and an abundance of text giving help in a subject so fascinating to the American boy in these times. Price, $1.20 net.

Pattern-Making Note-book by George G. Greene, is in use in numerous places and is receiving many favorable comments. Among such recently received we quote from Frederick N. Wilder, head of the manual training department of the Massachusetts Normal Art School in Boston:

"I have examined the *Pattern-Making Note-book* by George G. Greene, and believe that it is an admirable device for placing before the student in a very clear and simple fashion the fundamental facts of the subject.

"In the teaching of the subject a note-book of some sort is absolutely necessary and it would be hard to place these elementary data before the student in a clearer or more concise manner."

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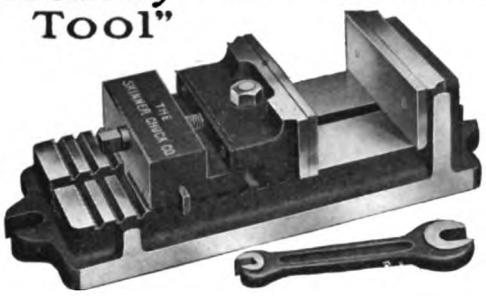
"The Handy Tool"

This Vise is designed for holding work on a drill table. It is similar in constructon to the Skinner Planer Chuck, but more portable and convenient for use on a drill. It can also be used to advantage on Planers, Shapers, Milling Machines, etc.



BODY—Carefully machined and highly finished casting, provided with lugs on side so vise may be used at right angles.

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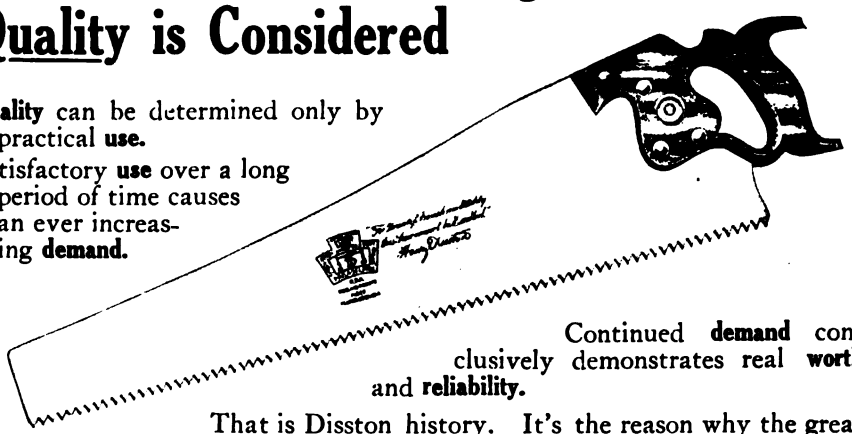

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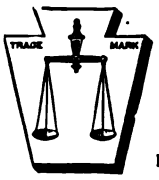

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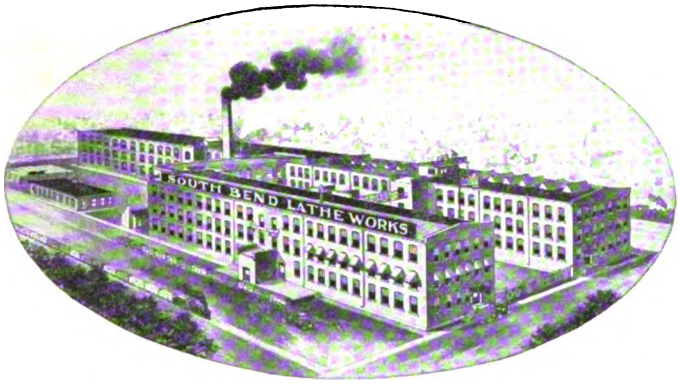

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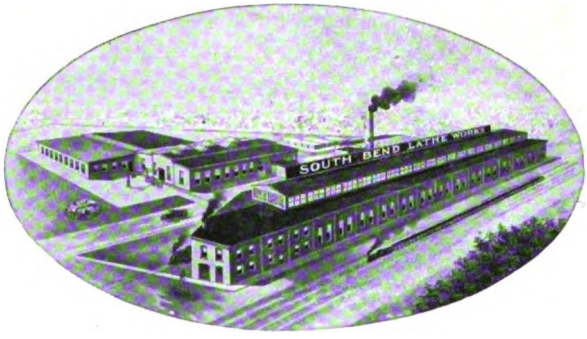

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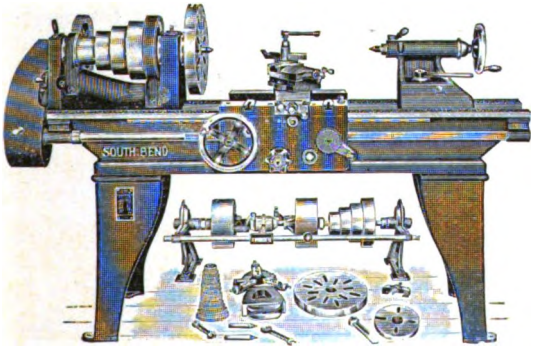

13 in. x 5 ft.	Lathe,	$299.00
15 in. x 6 ft.	"	387.00
16 in. x 6 ft.	"	475.00
18 in. x 8 ft.	"	623.00
21 in. x 10 ft.	"	925.00
24 in. x 12 ft.	"	1340.00

The 15 in. x 6 ft. Lathe illustrated above is the most practical size for the School Shop.

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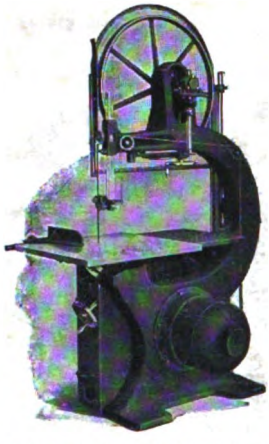
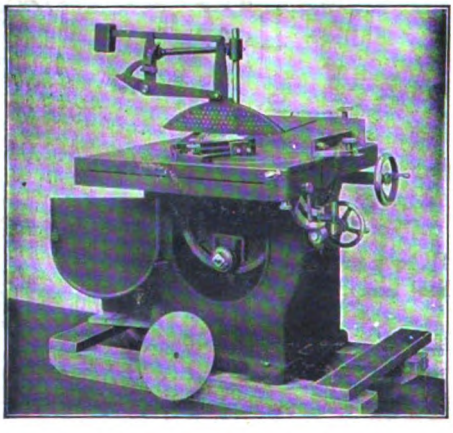


American 30-inch Band Saw
(Direct Attached Motor)



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A FEW years ago the Board of Education of Rochester, N. Y., organized an elementary Vocational School. **"American"** Woodworking Machinery costing $850 was installed.

In 1912 a group of pupils turned out on those machines **School** furniture worth $2900.

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Pupils from the sixth, seventh and eighth grades operate the machines **safely** and efficiently because the cutting mechanism is properly guarded.

Buffalo, New York, Jersey City, New Jersey, Winnipeg, Canada, and a hundred other cities are doing the same thing. May we tell you how you may make **"American"** machines pay for themselves in **your** schools?

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Vol. XX DECEMBER, 1918 No. 4

MANUAL TRAINING MAGAZINE

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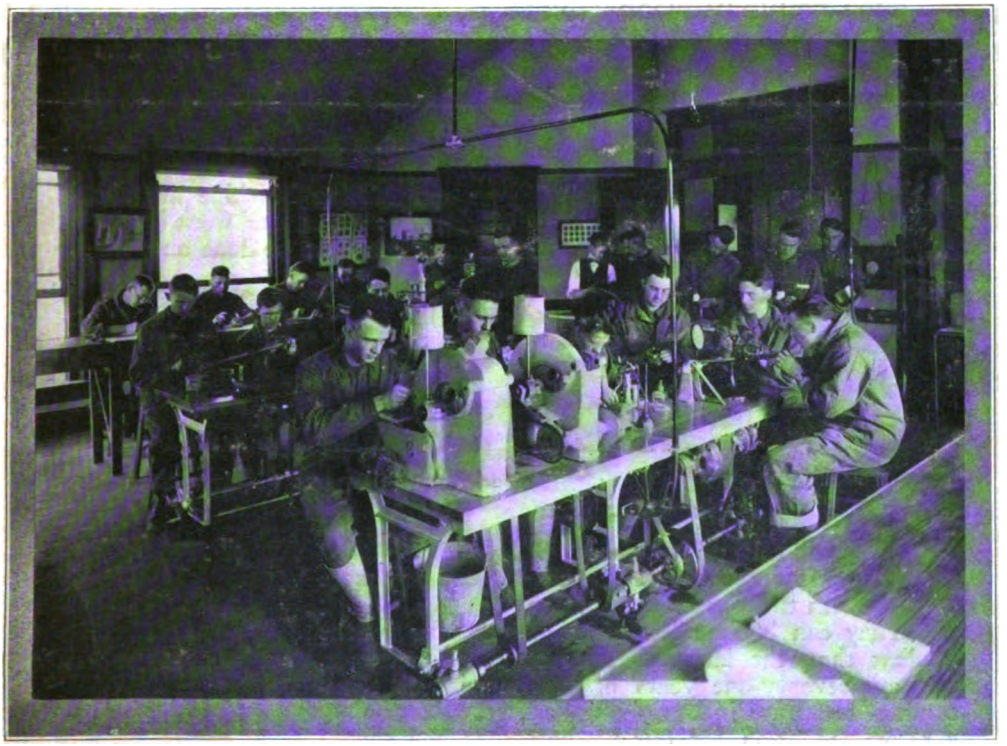

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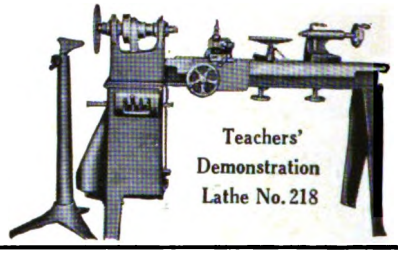

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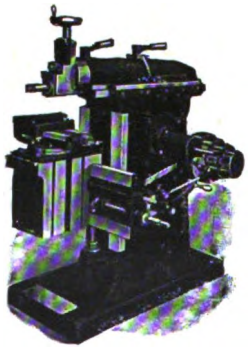

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They will produce small parts quicker than the larger machines.

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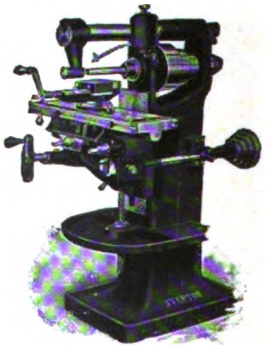
They can be handled easier and quicker by the student than the larger, heavier types of machines, and our seventy-one years of experience with thousands of machines in use giving daily satisfaction are a recommendation for our product that you should not overlook when buying your equipment.



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MANUAL TRAINING MAGAZINE

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This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.

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FIELD NOTES

THIS is the time of the year when the ambitious youth of the country and those whose early life lacked educational advantages, turn to the night schools. The work has expanded so much during the past few years that in the large cities night classes are provided for as generously as day classes. The educational activities incident to the present war have contributed added interest, and as a result attendance has been stimulated as never before. The following suggests somewhat the extent of evening school work:

Muncie, Indiana

The enrollment in the evening vocational schools of Muncie, Indiana, is the largest in the history of the school system. In the mechanical classes for men there are at present over four hundred and twenty-five men enrolled, and over fifty registrants who have been placed on waiting lists on account of classes reaching their limit before they enrolled. From all reports this is the largest enrollment in the state in evening vocational work, not excepting the larger cities.

The law requires that all trade classes must be taught by men who are engaged in the trade and actively employed in the industrial life of the community, and the school authorities have been very successful in securing instructors who are of the superintendent and foreman class, thus guaranteeing the finest grade of skilled instruction which is practical that can possibly be furnished.

Richmond, Virginia

The enrollment at the John Marshall high school started out with 650; Baker-Armstrong, colored, 722; vocational school, white, 236. The total enrollment in all the schools on the opening night was 3,548. Classes are held also in the Binford junior high school, Bainbridge junior high school, Bellevue junior high school, and several grade schools.

Buffalo, New York

Registration in the evening vocational teacher-training classes at Buffalo Normal School is complete for the present year. Eighty-one are enrolled for this work. Thirty-one men will probably complete the two-years' course in June and receive licenses to teach in vocational schools in the state. This will help solve the need for these special teachers next year in Buffalo and other nearby cities.

Wheeling, West Virginia

Classes in twenty different subjects are offered in the Wheeling high school. The shop work includes shop arithmetic, mechanical drawing, sheet metalwork and acetylene welding. In addition, the shop workers can secure instruction in the three R's and also in history, grammar and English for foreigners. It is believed that last year's enrollment of 728 will be exceeded this year by over 300.

Holyoke, Massachusetts

The enrollment in the Holyoke vocational school started out with a registration of 203 divided as follows: Carpenters' drawing and estimating, 9; automobile repairing, 44; electricity, 19; machine shop drafting, 13; machine shop mathematics, 9; machine shop practice, 54; pattern making, 7; printing, 11; radio signaling, 12; steam engineering, 5; firing, 8; loom fixing, 12. The attendance in the automobile repair class is much larger than was anticipated and since it continues to increase a second class is to be formed if an instructor and suitable quarters can be found. There is a demand for instruction in commercial telegraphy, but the school has not been able to secure a qualified instructor.

The school is departing from its usual line of instruction for steam engineers and firemen this winter by having the first three lessons of the course deal directly with conservation of fuel because of the coal shortage. C. Brooks Hudson, who will be the instructor in charge this winter, has been brought to Holyoke recently by the American Writing Paper Company because of his special knowledge and ability along this line. The first three lessons of Mr. Hudson's course will be given up entirely to conservation, and engineers and firemen throughout the city, whether members of the class or not, are cordially invited to be present and avail themselves of any information that may be given.

(*Continued on p. VI.*)

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FIELD NOTES—(*Continued from p. V.*)

Fargo, North Dakota

A night school offering instruction in mechanical and architectural drawing, gas engine work, civics, commercial arithmetic, and the history of the war is held three evenings a week. In addition, there are classes in the elementary subjects, with special emphasis upon English for the foreign born.

Worcester, Massachusetts

Free evening classes for men in nearly all branches of mechanical training are held in the Worcester Boys' Trade School four evenings each week. This year any boy over 16 is admitted to the night classes whether or not he has had any previous mechanical training. Formerly admission was limited to those who had had the advantages of mechanical experience. The work covers machine work, tool making, drawing and shop mathematics for the machine and building trades, gasoline engine work, pattern making, interior finish and cabinet work, house framing and stair building, electrical wiring and power plant operation.

Brooklyn, New York

Three new classes covering plumbing, woodwork and sheet metalwork have been added to the regular evening school work at the Brooklyn Evening School No. 5. A class in airplane wood work has been opened at the Bushwich Evening High and Trade School. Students in the latter class are required to have sound knowledge of carpentry.

Putnam, Connecticut

The evening courses offered in the State Trade School, Putnam, Conn., afford an opportunity not only to the local people but also to those in the nearby towns. Courses are given in machine shop practice, woodworking, electrical work, drafting and textiles. These classes are held for two hours every evening from October 7 to May 1, and the work corresponds to the regular day courses.

AROUND NEW YORK

The free nautical schools of New York, maintained by the United States Power Squadrons, Inc., have already given instruction to more than 3,000 men. These schools are now organizing new classes, which are open to everyone who is interested to learn. Most of the students are young men in the navy ambitious to improve their prospects. Some of them are eligible for the Merchant Marine.

The classes cover the subjects of coast-wise navigation, dead reckoning, nautical astronomy, deck seamanship, first aid, signalling, and mathematics. Each class meets once a week and the instruction covers about twelve sessions of two hours each.

These schools had their beginning in a movement by members of the U. S. Power Squadrons in 1909, merely for the purpose of securing to the members of the organization a proper knowledge of nautical matters. Some 600 members were instructed and passed satisfactory examinations. After the United States entered the war the work of the schools increased, and June 25, 1917, the doors of the New York schools were opened to non-members and a welcome extended to all who wished to study to fit themselves for our country's sea service.

The United States Emergency Fleet Corporation have trained over 10,000 learners to be ship workers. The corporation has an educational division and part of this division has been engaged in training men from trades kindred to shipbuilding into shipyard workers and instructors. To illustrate: a riveter on structural sheet work is trained in driving snap or button point rivets and sometimes flush or countersunk rivets in base plates of columns for buildings or end posts for bridges. The structural steel worker is made into a good riveter on ships and is used also to train green men to be ship riveters. A large number of competent instructors from trades allied to shipbuilding have been trained and then turned over to shipyards to train green men into experienced workers.

L. H. Haight is the supervisor of the training section of the educational division. He has worked many years in shipyards as an all around machinist, both in the shop and outside. During this period, he was successful as an organizer and in handling men. He also was an instructor in colleges and trade schools, including the New Bedford Industrial School and the Boston Industrial School.

(*Continued on p. VIII.*)

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The Finish Is Important!

SURELY this is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

JOHNSON'S WOOD DYE

Is just the preparation for staining models. It is very easy to use—goes on like oil without a lap or a streak. It is made in 14 attractive shades—which may be easily lightened and darkened. Over the dye apply a coat of

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FIELD NOTES (*Continued from p. VI.*)

The United States Navy has found that the supply of engineering officers for transport service and supply ships is far below the demand. To meet this need the Navy department has established the United States Navy Steam Engineering School at Hoboken, N. J., for voluntary induction of men of draft age. Applications may be made in person or writing to Ensign C. L. McIntyre, assistant mobilization inspector, 225 W. 42nd St., New York. The course is to consist of five months' training divided as follows: one month at the Pelham Bay Training Station, one month at the United States Navy Steam Engineering School at Hoboken, N. J., two months on Sound steamers and ferry boats, a trip across the ocean, and the last month at Hoboken, N. J.

The students and faculty of the Jamaica high school, New York City School System, have made an excellent record in conserving foodstuffs of the local community. The school has a seven acre school farm, two war gardens of about an acre in extent, and the facilities for canning. The work began last spring when, under Mr. Bagnell, of the commercial department of the school, five acres were devoted to potatoes and one acre to white beans. Five hundred bushels of potatoes and 400 pounds of string beans were raised and all—except a few held for the lunch counter—were sold at current prices giving the school a good profit. Miss Ella A. Holmes, of the biology department, organized a group of girls under the name of the Girls' War Garden, prepared the ground and planted tomatoes, corn, beans, peas, carrots, etc. The product of the garden will fill at least 750 quart jars. The ultimate object of all these activities in the school has been to enable the school thru its lunch room to combat, so far as it has the opportunity, the present conditions of food shortage and high prices which in so many cases bear heavily on the children in the public schools.

A nation-wide campaign for the enlistment of technically trained men in the shipbuilding industry has been instituted by the Educational and Training Section of the Industrial Relations Group of the Emergency Fleet Corporation. A special effort will be made to interest college students who have had technical training. Professor Frank P. McKibben, supervisor of technical training for the Emergency Fleet Corporation, formerly professor of civil engineering at Lehigh University, is conducting the campaign. Within a short period he has enlisted over 3,200 college students for shipyard work, and of that number 900 are now actually at work in the shipyards, contributing their specialized technical knowledge to the building of the ships.

The first course of instruction in the operation and management of merchant ships, ocean freight and other technicalities connected with the new American Merchant Marine, has recently begun at New York University and the City College of New York. These courses comprise a series of lectures by William M. Brittain, Secretary of the American Steamship Association, New York City.

The United States Shipping Board has taken over the Lake steamer "Missouri" as a training ship for merchant marine apprentices on the Great Lakes. The steamer will accommodate about 300 recruits besides officers and instructors. She will be stationed at a training base in Cleveland, and will be commanded by Captain Irving L. Evans, Chief of the Boards' Recruiting Service.

The United States Shipping Board is in need of firemen for the merchant marine. In order to make use of colored men volunteering in the southern states for marine service the Board is establishing a school for colored firemen on a training ship to be stationed on Lake Pontchartrain, New Orleans, La.

Van Evrie Kilpatrick, garden supervisor of the New York city school farms, has organized some very interesting and large experiments on school farms. Ten acres of land in the outskirts of the city have been divided into individual gardens conducted by boys who come out of the city. Each garden has been named for some soldier at the front. The Brooklyn farm was opened on April 29 by 300 boys from Superintendent Benjamin Veits' district in Brooklyn and was conducted by Lewis F. Bowditch. In a single week, July 27, the receipts from the Bronx farm had reached $566 and from the Brooklyn farm, $115.44.

—W. H. Dooley.

(*Continued on p. X.*)

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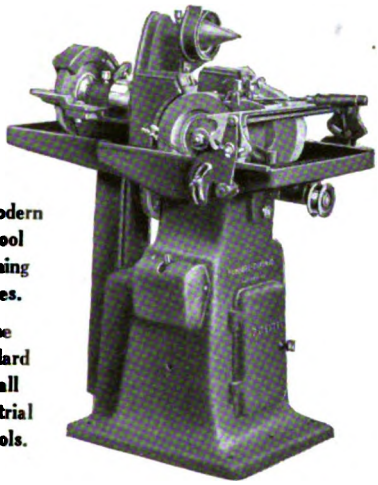
Mummert - Dixon Oilstone Grinders



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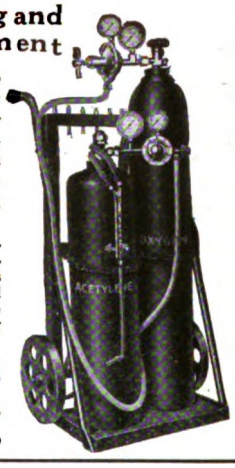

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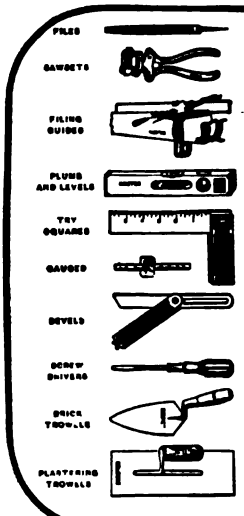

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without "DISSTON" on it.

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IN AND ABOUT BOSTON

Owing to the seriousness of the Spanish influenza, the Boston schools were closed for nearly four weeks when many of the teachers gave valuable volunteer service in providing for the sick. Canteens were established in different sections of the city from which stricken families were supplied with meals. In this service and as aids to nurses many teachers made good use of their "vacation" time. On October 21, schools were reopened and the usual affairs of the city have again become normal.

The October meeting of the Boston Manual Training Club was indefinitely postponed. This was in conformity to the ruling which prevented meetings of any kind and interfered with activities, generally.

At the Spring business meeting, the following officers were elected: George M. Morris, president, George C. Greener, vice-president, Andrew J. Leahy, secretary, George F. Hatch, treasurer. The president has since appointed the following chairmen for the standing committees: Ralph W. Babb, education; Francis L. Bain, program; Lester E. Markham, membership; Clarence M. Hunt, positions; Edward C. Emerson, press; Clarence W. Goodridge, social; James C. Clarke, librarian.

Francis L. Bain, instructor in co-operative branches, Dorchester high school, is now in service as captain of engineers and is assigned to Camp Humphreys, Virginia.

George C. Greener, director of North Bennet Street Industrial School, Boston, is now in charge of the Washington office for the administration of the Smith-Sears Act for vocational training for disabled soldiers and sailors.

For seven weeks during the summer vacation, the Parkman Prevocational School in South Boston was open for Red Cross work under the supervision of Edward C. Emerson, of the department of manual arts. The shops were in charge of Francis L. Bain and Arlon O. Bacon of the Dorchester high school. Boys from all parts of Boston volunteered their services. Out of a total of 126 volunteers, 24 were selected who could give the most time to the work. Among the articles made were 39 folding tables of oak, 28 taborets, 11 dressing tables, and 4 large screens. The expense of power was borne by the city, but the stock and the instructors' time were paid for by the Red Cross.

During the summer months a large number of vocational teachers, many of whom were from New England, were engaged in instructing ship yard workers under the Emergency Fleet Corporation. Among the men so engaged were M. J. Kane and M. G. Twitchell, Worcester, Massachusetts; Charles R. Cooke, Springfield, Massachusetts; Ernest W. Beck, Nashua, N. H.; T. F. Fisher, Lowell, Massachusetts; Harold B. Adams, N. H.; John Knight and George M. Morris, Boston, Massachusetts; J. N. Baker and W. A. LaSor, Philadelphia, Pennsylvania; V. A. Bird, Rochester, N. Y.; A. F. Dodge, Somerville, N. J.; W. H. Sterens, Trenton, N. J.; Newton Van Dalsem, Davenport, Iowa. In all there were about twenty-five men who reported for duty in Philadelphia the last of June. After an intensive course of instruction, prepared by Charles R. Allen, these men were sent as staff instructors to ship yards on the Atlantic Coast, the Gulf of Mexico, the Pacific Coast, and the Great Lakes. Some of these men were granted leaves of absence from their school work for an indefinite period, and are still with the Emergency Fleet. The training course as given to the ship workers is an adaptation to the shipbuilding trades of the Massachusetts training course for vocational teachers planned by Charles R. Allen. Upon the completion of the course, which requires at least six weeks, eight hours a day, the ship yard tradesmen apply their newly acquired trade of teaching in instructing green men to perform the operations, such as riveting, drilling and reaming, chipping and caulking, bolting up, etc., necessary to the building of a ship.

This branch of the Emergency Fleet has proved to be of much value in meeting the labor needs of shipbuilders, due to the increased production and the difficulty of securing trained mechanics. The results have shown the value of normal training with the application of pedagogic principles in preparing men to teach trade processes. In helping to meet the emergency of the shipbuilding program, the plan of making instructors of shipyard mechanics has shown the possibilities for manufacturing in general.

—GEORGE M. MORRIS.

(*Continued on p. XIV.*)

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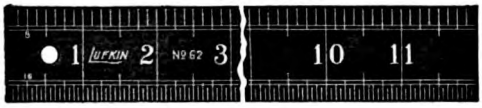
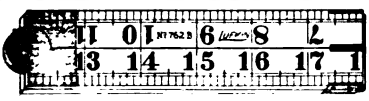
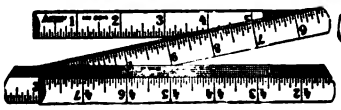
LUFKIN







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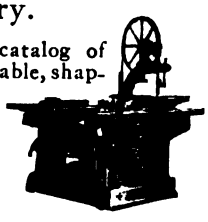

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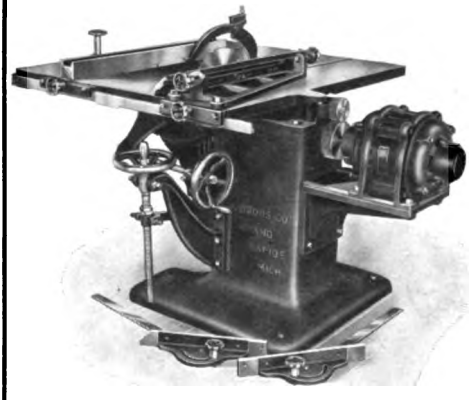

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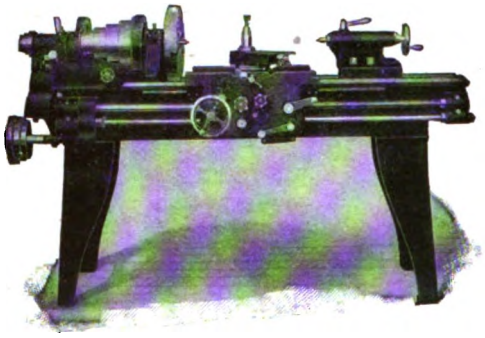
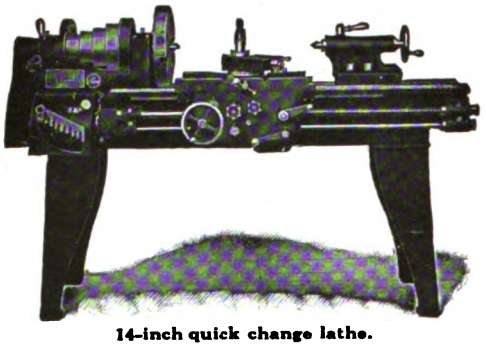
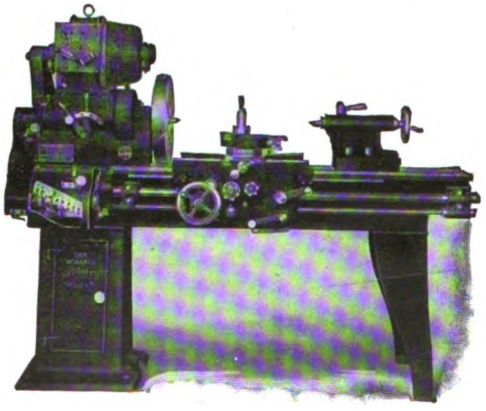


14-inch MONARCH standard lathe.



14-inch quick change lathe.



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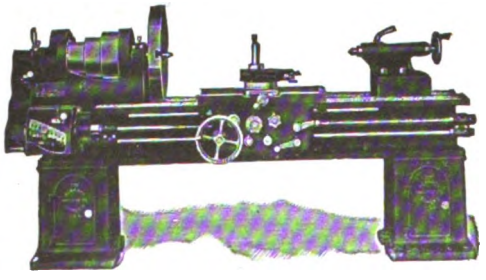

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VOLUME XX No. 4

MANUAL TRAINING MAGAZINE

DECEMBER, 1918

CHRISTMAS TOY MAKING AS A COMMUNITY CENTER ACTIVITY

LEONARD W. WAHLSTROM
Francis W. Parker School, Chicago

THE shortage of toys this year will no doubt be more seriously felt than ever, on account of the added numbers of workers from all forms of industry who have been drawn upon to fill the imperative needs of the war's demands. Altho toy making may be classed as one of the non-essential industries in the outside world, it becomes for that very reason one of the most essential industries to which the school should bend its energies at this season of the year, to the end that "happiness, of the children, by the children and for the children" may not perish from the earth. In some of the schools this is a feature of the year now well established, and the tremendous amount of good which has grown from the work in the past few years can hardly be estimated. With the demand so great as it is bound to be at the coming Christmas tide an attempt to supplement the efforts of the youthful workers may well be considered. To this end the following suggestions are submitted.

In order to "increase production" it is proposed to "draft" workers in this industry, just as it has become necessary to draft workers in the essential industries outside of the school. However, it is believed that there will be enough volunteers to fill the ranks of the workers, and that "the slacker" will be conspicuously absent. Why not toy making as a community center activity? Not to the extent of replacing the many forms of war activity which are already claiming so much of everyone's spare time, but to the extent of calling at this time of year for a small share of this time. In many localities the schools are already well used as community centers by the people of the district, and it is merely proposed to introduce toy making as one of the community activities for one or two evenings a week for two or three weeks previous to Christmas. The manual arts teachers of the school would first of all have to enlist the support of the principal and other members of the teaching force of the school as assistants in planning the work for the parents. The force should be well organized and the plans worked out in advance before the appeal is sent out to the parents to gather at the school on certain evenings of the week to assist in the work of making toys. The evening could well begin with a brief community "sing", after which the workers would separate to the various rooms or "departments" of the "toy

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factory" where materials would be ready for them to work upon. These would include the various shops devoted to the lines of handwork represented in the school, such as the woodworking and textile rooms and improvised shops in the various classrooms forward to by both parents and teachers alike. The same plan of work is carried out as is usual with the children. This consists in having each individual sign an "application" stating the department in which he or she would rather work and could

PARENTS MAKING TOYS AT THE FRANCIS W. PARKER SCHOOL, CHICAGO

devoted to lighter forms of work, such as pasting scrap books, making Christmas stockings, jumping jacks, dolls' clothes, bedding for dolls' cradles, etc.

During the past few years the parents of the Francis W. Parker School have been invited to share with their children some of the joy which is incident to this form of Christmas service for the benefit of our home charities. This parents' party has now become an established feature of our Santa Claus Toy Shop,* and the evening is looked do the most effective service. Considerable fun is had in practising a certain amount of "vocational guidance" with some of the parents while taking their past professional and occupational history. For instance, when a prominent physician gave his specialty as "eye, ear, nose, and throat," he was sent to the "veterinary" department and given the task of fitting new eyes and ears to some of the hobby horses which needed repair. With the aid of large upholstery tacks and the "sliding casters" used on furniture, together with skillful touches of color with a brush, he spent a profitable and happy evening and the result of his surgery was much admired by his fellow

*The organization of a Santa Claus Toy Shop has been described in the Manual Training Magazine for Dec. 1911 and in the Francis W. Parker School Year Book for 1912.

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workers besides providing material for a good deal of playful bantering and fun. One father who enjoyed his work in the painting department, asked to be assigned to that department the second year, and was made a "foreman." He said he was attracted to this work by the intense brightness of the red paint used on the carts.

It did not take long to "break the ice" in this parents' gathering, differing in this way from many of the formal meetings which the schools are so often accused of inflicting upon the parents. It was a pleasure to see the men throw off their coats and with them their reserve, and get busy at the various forms of manufacture represented in the many toys, all the while bantering each other with jokes and puns. Material which had been prepared beforehand, supposedly in sufficient quantity to satisfy the appetites for work was soon exhausted and the workers were clamoring for more. There were fortunately among the group, men who were familiar with the use of woodworking machinery, and the circular saw and the band saw were soon busy supplying the stock for more carts, doll's beds, cradles, Noah's arks and other toys. The lathes were also requisitioned and cart wheels, ten pins, etc., were turned out in plentiful supply. It was certainly a pleasure to see staid business men and professional men throw off the everyday cares and enter into the work with the enthusiasm and zest which was in evidence everywhere. When the time for refreshments arrived about ten o'clock there were many who preferred to spend the time at work.

I have spoken of the shop and the painting department. The entire gymnasium, however, had been fitted with tables at which many of the lighter forms of work were being carried out. Here were the "doll hospitals," the dressmaking and mattress making departments. Another group was busy making candy bags and Christmas stockings. A table for making jumping jacks was quite popular and the fact that the emergency kit was not requisitioned bears evidence of the familiarity of the boy of "yester year" with the jack-knife. Boyhood reminiscences were brought forth thru the medium of the sloyd knife, providing many a hearty laugh to the members of this group.

The various groups were given "time off" to visit the other departments, and when "father" was caught in the act, saw in hand, there was really no alibi to offer for the little neglected job of carpentry which "mother" had been patiently waiting for at home. A hasty promise to "get it done right away" freed the delinquent and permitted him to attack his work again with vigor.

At the close of the evening time cards were turned in to the paymaster and the familiar "pay checks" were given out. A force of high school boys and girls had been busy making out these checks from the records of the application blanks made out earlier in the evening. These high school pupils were the envy of their fellow pupils in being permitted to be present at this party of the "grownups." Some of the pupils, however, mysteriously turned up in nooks and corners where they could see without being seen and enjoyed the sight of their elders busily and unconsciously at work.

The pay checks, made out for "five happy days," on "Father Times Bank" seemed to many of the parents to be the culminating joy of a most pleasant evening. In some cases the simple bit of paper seemed to be as much treasured as though it represented a successful deal in the down-town financial district.

Altogether the time was well spent and the amount of finished articles which was contributed to Santa's stock was by no means a negligible quantity. The opportu-

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nity of again "renewing their youth" was appreciated and welcomed by every one present. Furthermore it brought home to every one the fact that the school of today is a community institution in which the idea of service is the predominant motive developing a co-operating citizenship. The plan is recommended to fellow manual training teachers and school principals as well worth the energy necessary to carry it thru.

INDUSTRIAL WORK IN ENGLISH ELEMENTARY SCHOOLS. II

INDUSTRIAL WORK IN SCHOOLS DURING THE EARLY PART OF THE 19TH CENTURY

WILLIAM BRADBURN
Head Master of Municipal School, Old Hall Drive, Groton, Manchester, England

IN A previous article a short account has been given of the Charity Industrial Schools of the 18th Century. The establishment of the British and national schools, however, gradually brought about the extinction of the industrial schools. Under the influence of Bell and Lancaster the intellectual side of the school's activities was increased and strengthened; but neither of them made any special provision for the teaching of industrial work in their schools, nor did they advocate such work, except in certain classes of schools, viz., those which were attended by the children of the very poor.

It would seem, however, that by a few of the educational enthusiasts of the early part of the 19th Century, an idea of the true position and function of industrial work and its relationship to the other subjects in the curriculum was being realized slowly; that is, that it should be considered as much a means of developing and training the child's faculties as the other subjects on the time-table.

It must not be taken for granted that schools in which industrial work was carried on were numerous. On the contrary they were few in number. They were, as indeed was the case with all schools at that time, the outcome of private benevolence coupled with a belief, on the part of their founders, in industrial work as an effectual educational force.

As was to be expected, some of the features of the earlier charity industrial schools were retained. For instance, either payment was made to the children for their labor, or the profits arising therefrom were secured to them.

On the other hand, the voluntary principle was introduced; that is, the boys at any rate, were not forced to take up industrial work against their desires. It was thought, too, by some that this work should be adopted more as a means of relaxation from the monotony of the ordinary school routine than as a subject to which the boys should give their serious attention.

A few examples of these early 19th Century schools may now be given. They may be regarded as typical of those elementary schools in which industrialism found a place in the curriculum, altho the form of the industry varied to some extent.

THE GOWER'S WALK SCHOOL, WHITECHAPEL, LONDON

This school was founded about 1808 by a Mr. William Davis and three other gentlemen on the plan advocated by Dr. Bell. Mr. Davis had given a very great amount of attention to the subject of education, and especially to that portion of it which dealt

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with the combination of industry and the ordinary curriculum, or in his own words, "he had been very much engaged in adapting schools to the plan of mixing industry with education." Furthermore he had come to the conclusion that an intimate connection between the two could result in nothing but good to the children.

Accordingly at the Gower's Walk School, over which Mr. Davis exercised complete control, the curriculum was arranged in such a manner as to provide opportunities for the teaching of an industry, and *printing* was introduced.

Mr. Davis stated before a select committee of the House of Commons on education, in 1834, that printing had justified itself as a means of education, and that the results were quite satisfactory. In 1834, there were from one hundred to one hundred and ten boys in attendance at the school. They were not admitted before they were eight years old and efforts were made to retain them until their fourteenth birthday. In this the managers were successful with about one-third the total number admitted.

A boy usually took up the occupation of printing when between nine and ten years of age and was not in any case allowed to commence before that age. The boys generally spent about three hours per day in the industrial work. They were all volunteers, and no element of compulsion was required to secure plenty of workers in the "printing shop," either at the press or the cases. No indication was given by Mr. Davis as to the source of the orders from which the profits, acknowledged to be considerable, arose, although specimens of work were shown to the committee, especially some copies of the "school reports"—all printed by the boys in the industrial part of the school.

These profits were expended chiefly in rewards for the children, and were applied in such a manner as to induce them to stay at school until the latest possible moment.

A further use was made of a portion of these profits and the accounts of them may be given most suitably in Mr. Davis' own words:—

"We encourage them by retaining a part of their earnings at our own disposal, till they are at the age of fourteen, and there is a regular list of all the money that all the boys have earned, placed up in the schoolroom, so that when any visitor goes, he can almost discover who are the best boys, for we invariably find that the boys who have earned most are the best; then when they go away at fourteen, having acquitted themselves properly, that money is given to them to purchase clothing, and set themselves off a little comfortably, as apprentices or in service whenever they may get fixed."

Mr. Davis' faith too in the truly educational effect of industrial work appears to have been amply justified, for experience proved that the boys who did not avail themselves of the opportunities thus offered were considerably less advanced in their intellectual studies than those who worked in the "printing shop." The prizes given for reading, writing and cyphering, were invariably gained by those boys who were mostly employed in printing.

Another effect appears to prove that the industrial work of the school was really educational and not merely vocational. It neither provided an indifferent apprenticeship nor a means of over-loading the labor market with cheap child workers, for the boys did not, as a rule, become printers when they left the school. "I know but few who have gone as printers," said Mr. Davis. "I do not think a dozen out of the many hundreds which have passed thru our school. They have learned the habit of diligence"—surely one of the very best results of any system of education.

Moreover no attempt was made to teach printing as a trade, for no boy learned its processes thruout; the studious endeavor of the managers and teachers being that the whole school course should, as far as pos-

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sible, by the inculcation of habits of industry and obedience prepare the boy for his future life as a citizen, and, in their opinion, the teaching of an industrial occupation during his school career considerably furthered that object.

TRAINING THE FIGHTING MECHANIC AT BRADLEY INSTITUTE

II. LENS GRINDERS

ALBERT F. SIEPERT
Educational Supervisor, S. A. T. C. Vocational Section

THE idea of attempting to train men as lens grinders as war emergency work began in a conference between Dr. Stratton of the Bureau of Standards, Washington, D. C., and a member of the faculty of Bradley Institute. It was evident that a shortage of lens grinders existed in this country, and that the importation of lenses had not only become exceedingly difficult, but almost impossible. To meet this condition it was eventually decided to introduce a course at Bradley Institute for the men sent to receive technical training for various branches of the Army service. The problem confronting the Institute was to find an instructor, secure adequate equipment, and plan a course of instruction.

EDGING BY HAND ON A GRIND STONE

It has been considered essential to spend from three to five years in learning the trade, and even then the all-around lens maker is rather unusual, since most men become specialists along one line only. This fact became painfully evident in the search for an instructor who could give the men the desired training. It was said that the city of Chicago had but three such men, hence the Institute considered itself fortunate to secure one of them, Mr. Bernsten, to take charge of the class. The equipment was secured as rapidly as is possible during these times, and the first class began work about the middle of July.

The men sent for the class came from one of the concentration camps, but upon arrival were found not to have been selected with special reference to the course to be given. Permission was secured to select men from the entire detachment, and on this basis, graduation from a high school having a course in physics as a part of the curriculum was considered a prerequisite. Technical experience of a related kind was given due recognition. For example, a photographer would receive preference, other things being equal, over a man whose experience had been along clerical lines.

The method of instruction at Bradley Institute has been simple and direct. Lectures are given on light, the action of lenses and different curvatures for different purposes. Then follows specific demonstration

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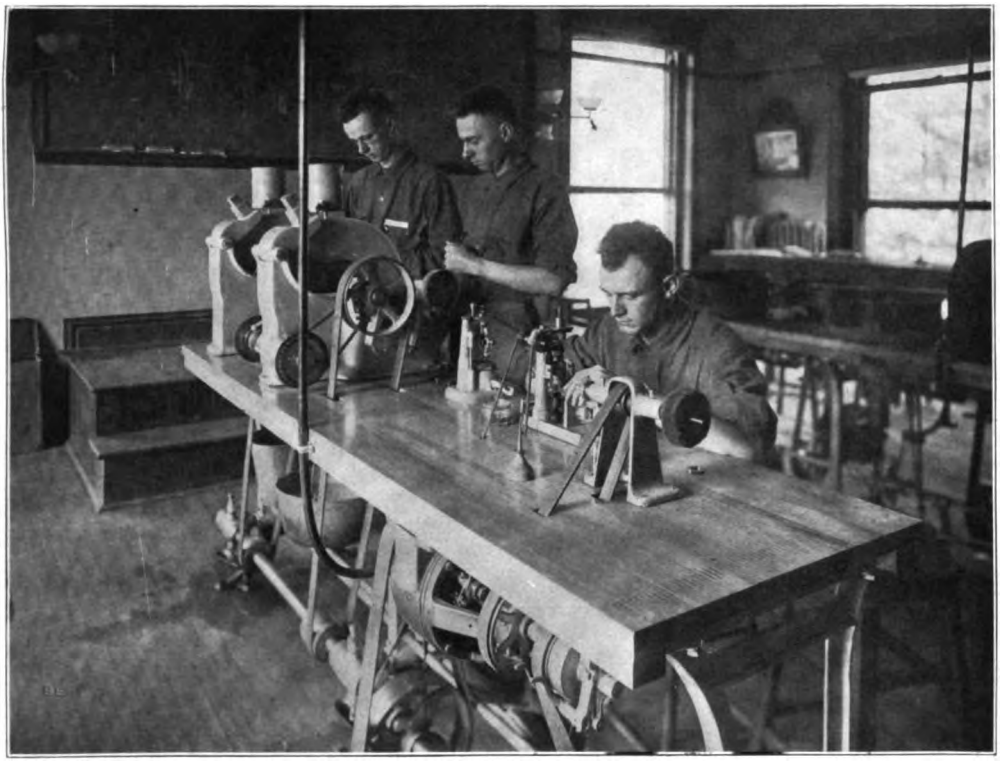
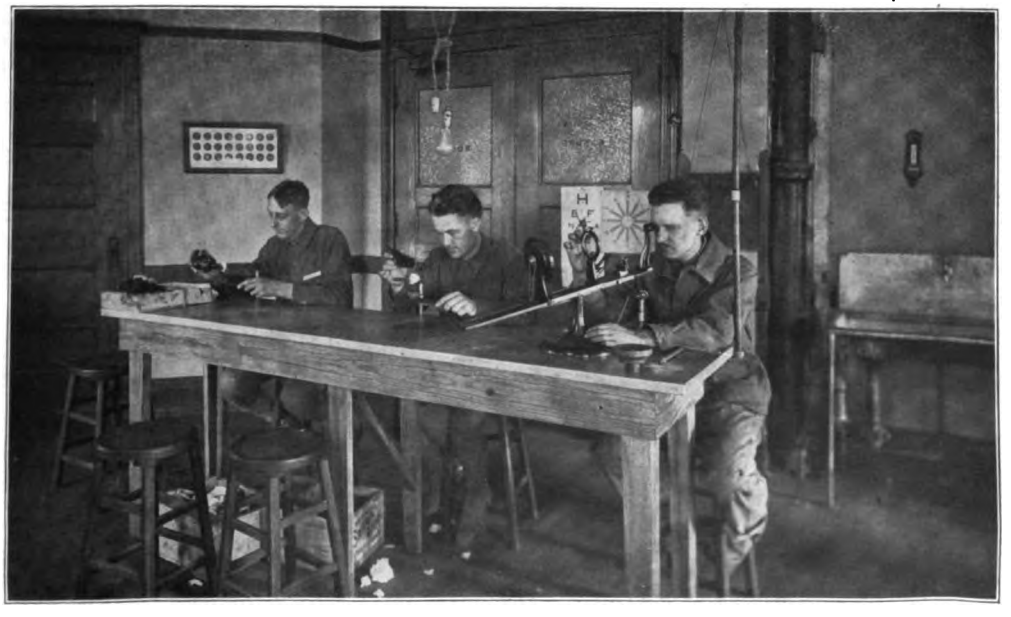


EDGING BY HAND AND ON AUTOMATIC MACHINE. CUTTING THE LENS TO DESIRED SHAPE AND SIZE



CEMENTING GLASS BLANKS TO CAST IRON BLOCK WITH PITCH. MEASURING A LENS

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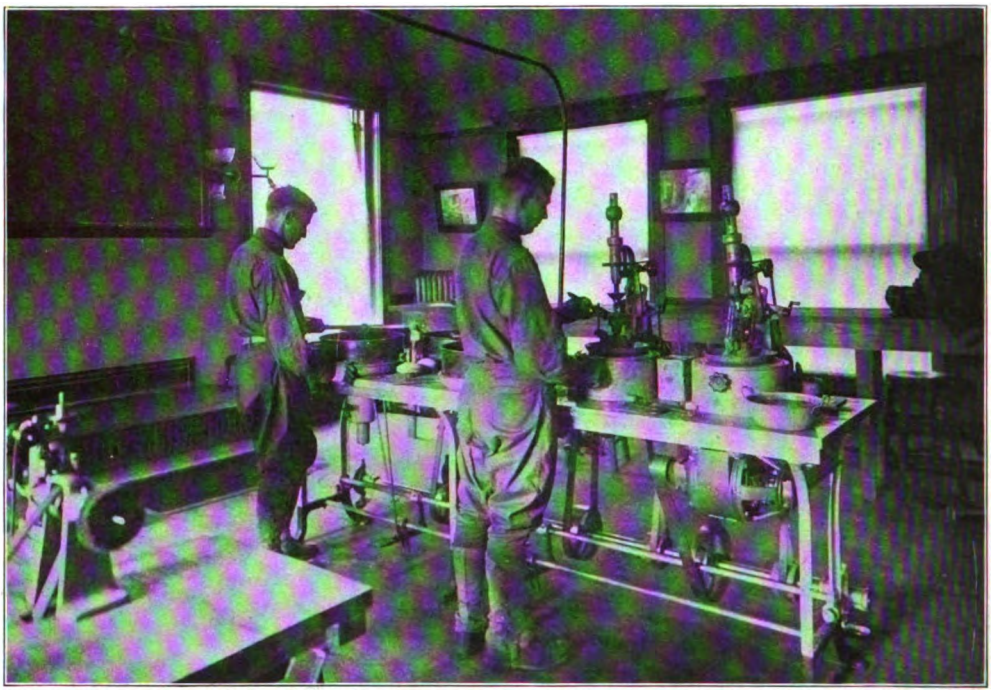

STUDENT AT THE RIGHT IS WORKING ON A HAND GRINDING MACHINE; THE OTHER IS USING AN AUTOMATIC MACHINE

in grinding and polishing, after which the student goes thru the steps himself. These include:

(a) Cementing the glass blank to a cast-iron block with pitch.
(b) Proper "lap" to be used for the curvature desired.
(c) The grades of alundum from coarse to fine for grinding.
(d) Proper arm movements.
(e) Polishing.
(f) Repeat processes on opposite side—taking special care to get exact thickness.
(g) Find optical center and axis on centering machine.
(h) Edge on hand or automatic grinding machines.
(i) Mount in permanent form, including drilling holes and making mountings to given measurements.

The lenses made cover such types as spherical, cylindrical, sphero-cylindrical and prismatic. They find use in spectacles, binoculars, etc. The class has also made simple microscopes. The chief difficulty found with the lenses made has been the glass. It has been next to impossible to procure the proper kind for the kinds of lens desired.

Enough time has gone by to make sure that lens grinders can get considerable training in a course of this kind, and that after the war the Institute will be in position to prepare men for positions as lens grinders in the optical industries.

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BENCH METAL WORK

AS GIVEN IN ARMY TRAINING DETACHMENT

EARL ARVIN POTTER
Instructor in Gunsmithing, University of Wisconsin

THE object of the course is to teach the proper use of bench and vise tools, to give instruction and practice in reading mechanical drawings, and to acquaint the students with the characteristics and uses of iron and steel.

The chief tools found on the bench, are files, chisels, and hammer, center-punch or prick-punch, scribe, scale, square, calipers, dividers, drills, taps, and dies.

of a class of forty students about ten had variations of over ten thousandths of an inch while the rest of the students had less, and some had only a range of two to five thousandths from a perfect surface. No tool was used prior to the final testing of the finished piece, except scale, square and outside calipers.

With each project the student is furnished with a mimeograph drawing of the

FIG. 1. METALWORKING SHOP AT THE UNIVERSITY OF WISCONSIN

Correct filing is perhaps the most difficult practice in benchwork to acquire. The student will persist in grasping the file improperly, taking too long a stroke on a small narrow surface and putting too much weight or pressure on the tip of the file with the left hand.

On all work where it is feasible the surface-gage indicator is used to prove just how true a surface the student has produced. In the project known as the paper weight out

exercise which is much less expensive than the blue-print, and serves the purpose fully as well.

To produce a good filer is the result of constant practice and repetition of proper methods. The first project taken up in the course is the paper weight, Fig. 3. The student is given a rough cast iron block and is expected to chip and file to the dimensions of his drawing. This exercise has several flat surfaces, two grooved surfaces and a

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surface at 45° angle to its companion surfaces. It gives good practice in laying out and also in drilling. The student is not allowed the use of a drill until he can sharpen the drill properly and explain why he sharpened it in that way. One's ability or inability to file is shown on this exercise very plainly.

The student is obliged to report for marking after every completed operation. After the base surface has been chipped the student must report for grading, and after the same surface has been filed the student must again report. In this manner the instructor has a very close record (mental record, perhaps) of the student's progress.

Project number two, the pliers, Fig. 4, is an exercise in laying out, shearing with chisel and vise, bending, fitting and assembling. The student is given two pieces of 8"x1½"x3/16" cold rolled steel and a drawing of the pliers. First the work is layed out and sheared, then the sheared edges are finished to outline with file. Next the jaws are bent, and then the handle. Finally the parts are fitted and the rivet hole drilled.

The pencil compass, Fig. 4, is another shearing and fitting exercise. This is a useful article in both the shop and at the desk. A worn phonograph needle is soldered onto the end of one leg for a point. This compass is made out of cold rolled steel, .050" thick x 6" x ¾" and 6" x 1¼".

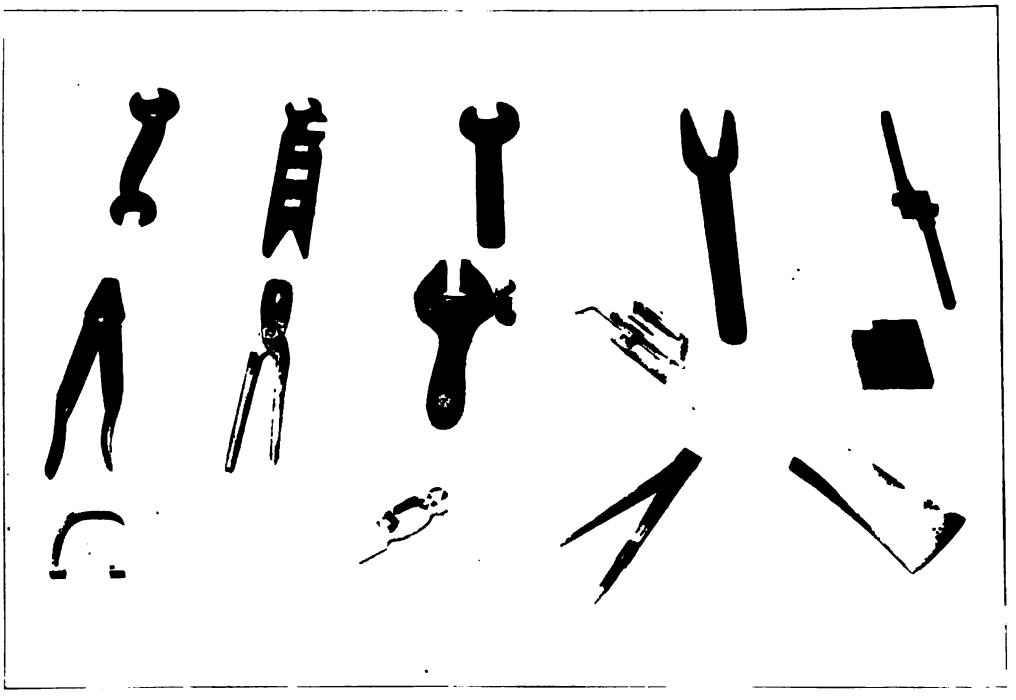

FIG. 2. PROBLEMS IN METALWORKING

The tap wrench, Fig. 2, is a very good project, and a useful tool. The jaws are made of ½"x½"x1½" cold rolled steel, and the handles of ⅜" round steel. This project involves filing, drilling, tapping and thread cutting. Great care must be taken in the last three operations in order that the handles shall line up with each other.

The tweezers, Fig. 3, are made from hack-saw blades. This is a very handy

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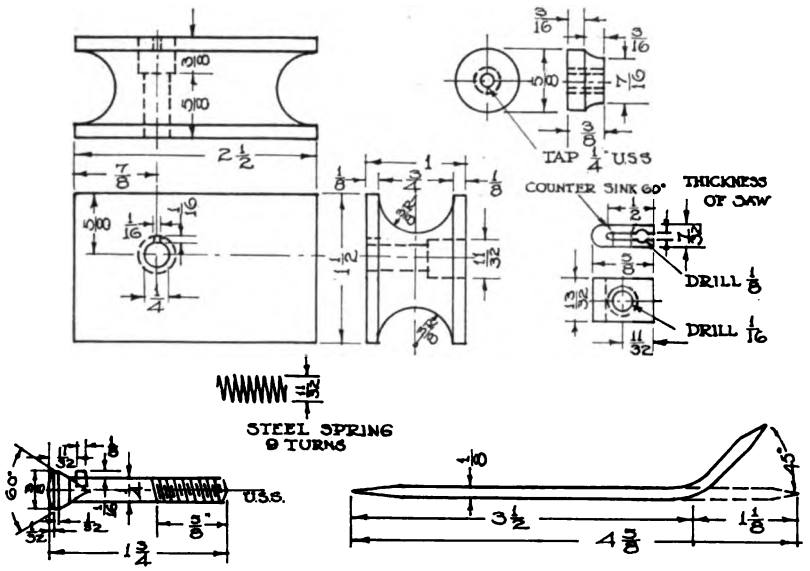
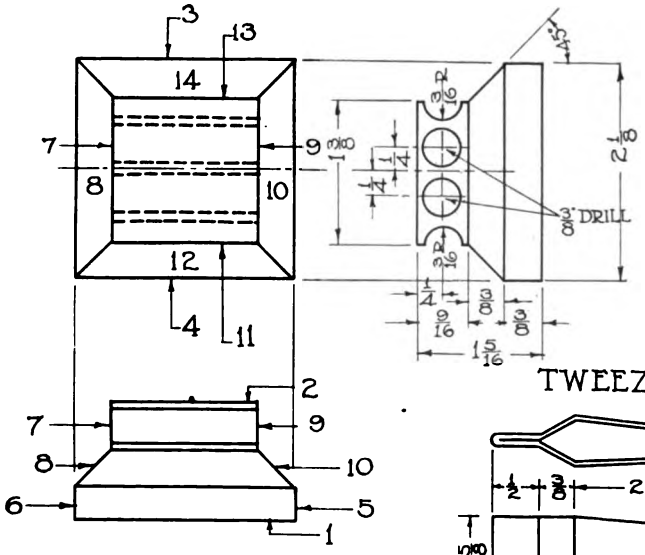
SCRATCH BLOCK



PAPER WEIGHT



TWEEZERS

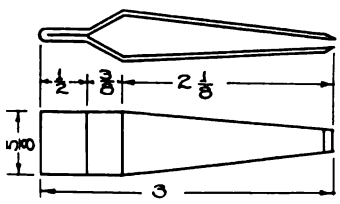


FIG. 3

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article to have available, and one which teaches the student the working of tempered steel. The blade must first be annealed, then shaped and formed, then rehardened and tempered.

The combination wrench, Fig. 4, affords a very interesting problem in laying out. At the same time the operations required to finish it are not difficult. It is made from 3/16" x 1½" x 8" cold rolled steel.

The open end wrenches and the S wrench, Fig. 2, are from hand forgings made by the student blacksmiths. The student is required to make a wrench to fit the head of a standard bolt of a specified size. He must calculate the diameter of the bolt head and then he must work out the proportions of the wrench by formula. After laying out and prick-punching the outlines, the student drills and broaches out the opening and then files the wrench to outline.

The hand vise, Fig. 2, is chiefly a fitting and assembling exercise which demands careful filing and good mechanical judgment.

The scratch block or surface block, Fig. 5, is a very good test of the student's ability to lay out correctly, to file accurately, and to drill accurately. The piece is made of mild steel finished 1½" x 1" x 2½". The grooves on all four edges are made by clamping two blocks together and drilling, first with a pilot drill and then with the larger size called for on the drawing. This project includes, also, the making of a coil spring besides thread-cutting and tapping.

The hammer and axe shown in Fig. 2 are shaped up by eye from hand forgings.

All wrenches, scratch blocks and pliers are box carbonized and hardened. The wrenches and pliers are tempered. The tap wrench is cyanide case-hardened. The students are taught the various processes used in heat treatment of steel, and how to distinguish different steels by the sparks from a grinding wheel. They harden and temper the tools they make. This course also includes babbiting of a split box and solid boxes.

Each student is required to keep a note-book. Lectures are given about three times a week. These must be written up in his note-book. The note-book also includes a record of what the student did each day together with drawings of his work.

The following is a sample of the instruction sheets given to the students:—

FILING

Files are listed according to their size, their shape, and the spacing of their teeth.

Thus, ordinary files are from 4" to 20" in size measured along the body of the file.

They are flat, hand, half-round, square, etc., according to their shape.

They are coarse, bastard, second-cut, smooth, dead-smooth, according to the spacing of the teeth.

Files are double-cut except for special purposes such as mill-saw files and mill-saw tapers, commonly called "mill files" and "tapers." These are single cut.

If new files are used on thin work or on narrow surfaces, with too much pressure, their teeth will be broken as the points of the teeth of new files are very fragile, because of their hardness and their fragile shape. After the teeth are worn down by service, more pressure may be used, but care should always be used when filing the edges of thin sheet steel. In filing to remove a considerable depth of metal a coarse or a bastard file should be used. If the file is carried to the left as it is pushed across the work, the teeth take hold easier because they cut with more of a shearing effect, but they leave deeper scratches.

In filing flat surfaces, the files must be sharp enough to cut easily, since accurate work cannot be produced when the muscles are under heavy strain. The position should be changed frequently so that the strokes cross each other in order that the workman can see where the file is bearing. If there are low spots, these may be avoided when finishing a surface by taking care that the file does not travel over these spots. The stroke should be short, as the file cannot be held level thru a long stroke, except after long experience on such work. Do not use the smooth file until the surface has been brought fairly level with the coarser files.

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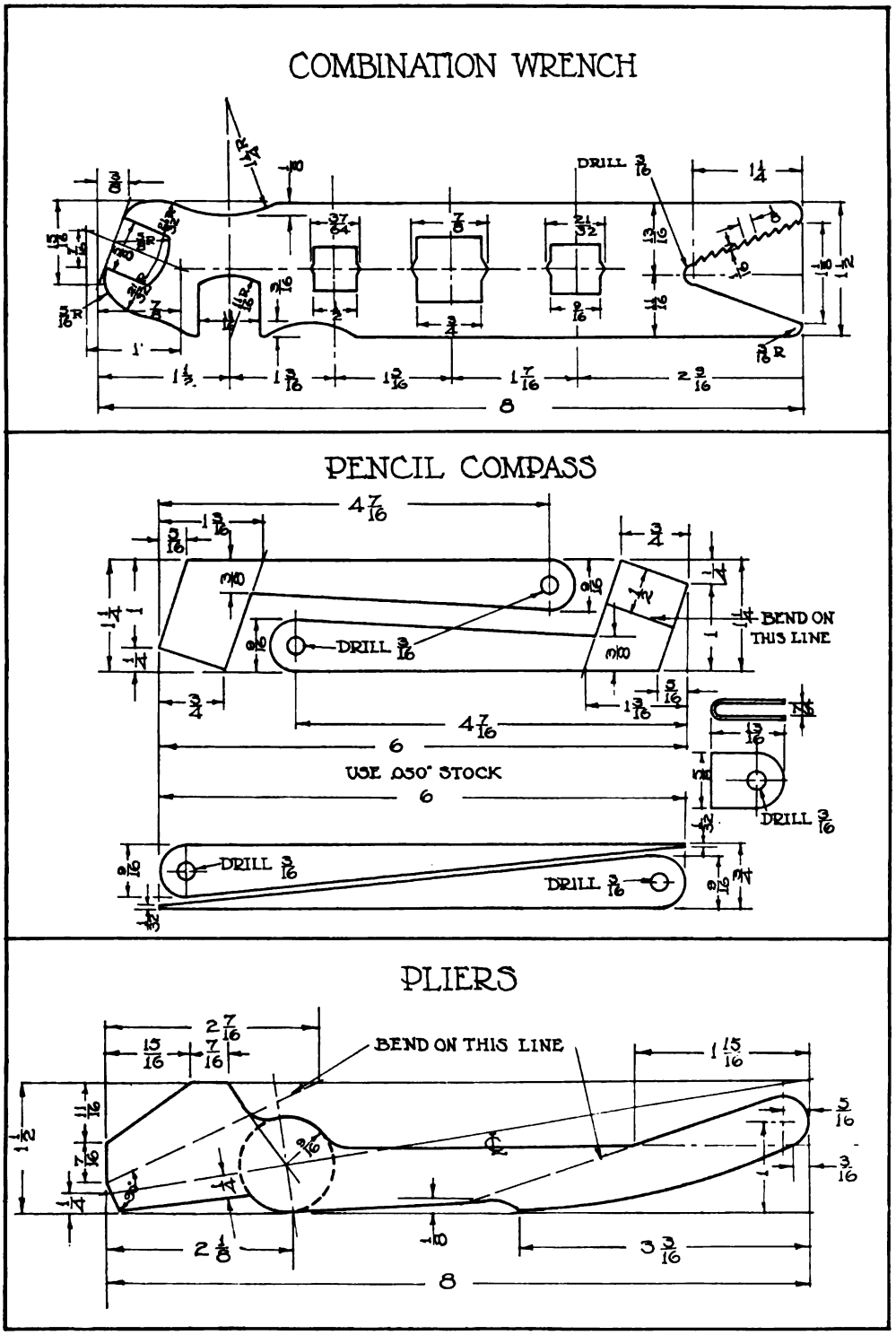

FIG. 4

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To sum up then, in finishing flat, smooth surfaces with files, use sharp files, use short strokes, cross the strokes, keep the files away from low spots, level the surface with the coarser files, finish with smooth files.

Draw-filing is the use of the file by holding it crosswise of the work and drawing or pushing it so as to take a shearing cut with the corners of the teeth. If the file is drawn towards the workman the tang end of the file should be in the left hand. If the file is to cut when pushed away from the workman the tang end should be in the right hand.

In draw-filing, as in all other methods of filing, the file should not be made to cut on both strokes. This rule is often violated however when draw-filing with light pressure, in order to secure a smoother finish.

Whether the stroke be short or long, the file should be made to cut thruout the stroke, and should never be permitted to slip over the work without cutting, as this dulls the file rapidly.

When filing steel or brass the file will clog or "pin" and a nail or heavy wire which has been hammered to a wide flat point is used for clearing the teeth. A file card provided with wire teeth is commonly used to clean all loose dirt and filings from the file. Neither the file nor the work should be rubbed with the hands as the oil from the skin glazes the work and makes filing much more difficult.

CHIPPING

In chipping broad flat surfaces, the cape chisel should be used to cut channels across the work to guide the chipping chisel.

The chipping chisel should be moved from side to side so that it bears against the corners of the material to be removed, thus wedging the chips off more easily.

The chisels should be kept sharp with the cutting angle about 60°. The chips should be light as this will help in keeping the chisel sharp. This is especially true when chipping in a groove, a key seat or under any conditions where the corner of the chisel has to cut.

If the corner of the chisel has to cut metal from both the bottom and the side, the corner will either dull or break with a heavy chip. If the chisel is as hard as it should be to keep sharp, it will break. If tempered sufficiently soft to be tough enough to stand heavy chipping in a corner, without breaking then it will quickly dull, and no good chipping can be done with a dull chisel.

A hard chisel cutting light chips should be the rule for good work on cast iron or steel.

The round-nose chisel is used for cutting half-round grooves such as are used for oil grooves.

The diamond-point chisel is used for working in square corners such as a socket wrench for square nuts. This chisel should be used with particular care. It should be kept sharp and should be used for light chips and with light blows.

In chipping the hammer should be held near the end of the handle. It should swing in a nearly vertical plane in order that the blows may be struck with the least strain and exertion. If the arm or wrist becomes tired the blows will not strike true and poor work and bruised knuckles will result.

The hammers should be proportioned to the size of the chisel. A 1¼ lb. or a 1½ lb. hammer should be used with chisels of ⅝ in. or ¾ in. steel. A ¾ lb. hammer should be used with ½" chisels, and in like manner still lighter hammers down to 4 oz. and even 2 oz. for very fine light work.

The habit of tapping the head of the chisel before each heavy blow should be avoided as it is a waste of time and thoroly bad form.

PAPER WEIGHT INSTRUCTIONS

(1) Do not grind any part of this paper weight. Chip each surface before filing.

(2) Chip surfaces 3 and 4 to remove draft so as to hold securely in the vise.

(3) With cape chisel, chip one groove across surface 1 about 1/16" deep. With chipping chisel, chip surface 1 as nearly level and smooth as possible.

Report to instructor for grading.

(4) File surface 1 with bastard, second cut, and mill files, as level and smooth as possible.

Report to instructor for grading.

(5) With surface gage, lay out and prick-punch surface 2. Chip surface 2 in same manner as instructions for 1.

Report to instructor for grading.

(6) File surface 2 as instructed for 1. Report.

(7) Lay out 3 and 4 to dimensions and chip. Report.

(8) File 3 and 4 same as instructed for 1. Report.

(9) Lay out 5 and 6 square with 3 and chip. Report.

(10) File 5 and 6. Report.

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(11) Lay out 7 and 8 with surface gage and 45° parallel fixture and chip. Report.

(12) File 7 and 8. Report.

(13) Lay out 9 and 10 and chip. Report.

(14) File 9 and 10. Report.

(15) Locate center lines on 7 and 9 and lay out the ⅜" holes on both 7 and 9. Lay out 11 and 12 and 13 and 14 and chip these, chipping 11 and 13 flat before chipping the half round grooves. Report.

(16) File 11, 12, 13, and 14. Report.

(17) Drill ⅜" holes half way from each end holding piece on center. Report.

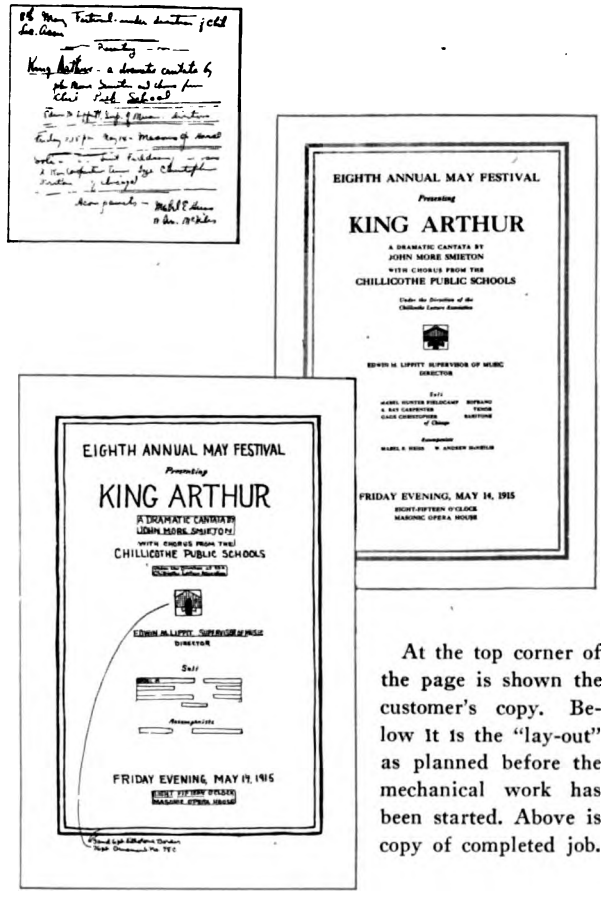
THE USE OF LAY-OUTS IN TEACHING DESIGN

BY RALPH W. POLK
Director Vocational Training, City Schools, St. Joseph, Mo.

ONE of the most important phases in printing instruction is the teaching of design. I might add, that, to me, it is also one of the most delightful phases of the work. Without a thoro training in the elements of good typography, a boy cannot hope to succeed in the realm of modern printing. The processes of setting type, locking forms, and feeding presses may be considered properly as mediums thru which good design may be expressed.

Printing design can be taught best by the "lay-out" method. Lay-outs are preliminary sketches, or plans, of the copy as it is to be composed in type form. They may be made with pencil, pen, or crayon. They should be drawn to size, and should represent rather clearly the effect desired in the finished work. In every case, they should show the plan and arrangement to be followed in composition, and indicate what type styles, borders and ornaments are to be used. While these may be drawn on any kind of paper, a special blank is now generally used on which are dotted lines forming squares one pica in size, numbered at the top and side. These blanks have been used in an accompanying lay-out, Fig. B.

The making of this preliminary sketch, or lay-out, is necessary in order that all parts of the composition may be appropriate, harmonious, and may bear the proper relation to each other. This plan also proves a time-saver, for often unsatisfactory features will appear in the lay-out which



At the top corner of the page is shown the customer's copy. Below it is the "lay-out" as planned before the mechanical work has been started. Above is copy of completed job.

FIG. A

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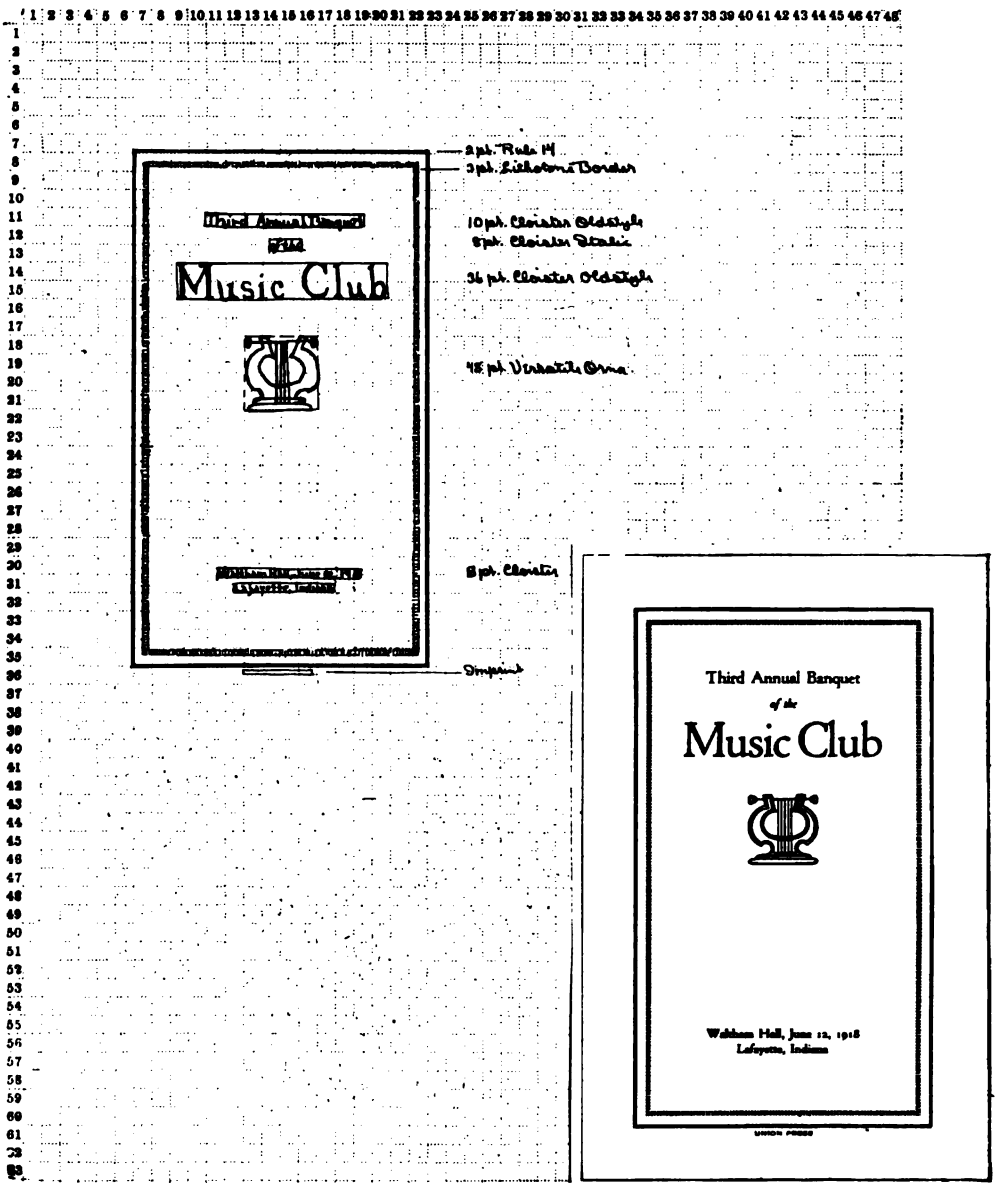

FIG. B

can be corrected very easily, but which would cause a good deal of extra work if not discovered until a proof of the type form is obtained.

The method of making preliminary lay-outs may be compared to the work of an architect before the contractor erects a building. Both are necessary in obtaining proper results in an orderly manner.

The use of the lay-out is illustrated in Fig. A. At the upper left corner appears the customer's copy; below is the lay-out; and at the right the resulting type form is reproduced.

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In Fig. C a cover-page is shown. This form was composed without a preliminary plan, and apparently no attempt at design. This same copy, in the hands of a printing student, was worked out as it appears in Fig. B. The lay-out as drawn by the student contains all the details for the reconstruction of the type form.

It is especially desirable to use the lay-out method in the study of color in printing. Colored crayons may be used, and much time, labor, and expense may be saved by ascertaining the proper color combinations in this way.

Very little equipment is needed for lay-out work. The special ruled lay-out sheets should be in the hands of every student. A pencil, a line gauge, and a set of crayons will complete the outfit. For finer work by advanced students, a T-square and triangle, a pair of shears, drawing pens and ink, and a few small brushes will be useful.

The practice of making lay-outs is of double value to the student because of the practical use he will make of the training in actual trade work. Lay-outs are very generally used in the production of good printing. In the large plants, typographers are employed to plan all the pieces of printing before they are composed. In smaller plants where this work would not take the entire time of a lay-out man, the head compositor usually does this designing in addition to his work at the cases. Training in the construction of lay-outs, therefore, will broaden the student's opportunities for advancement and usefulness.

FIG. C

THE GAME OF MILL, OR NINE MEN'S MORRIS

JOHN H. SANDT
Instructor in Manual Training, State Normal School, Winona, Minn.

THIS game is also known as Morelles, Merrils, Marrel, Five-penny Morris, Shepherds' Mill and Peg Morris.

Some ten years ago, my attention was called to the game of mill in the seventh-grade shop-work when a number of mill boards were made.

I found that the children's parents and grandparents used to play the game quite generally in the Middle West some forty or fifty years ago. The game being new to me, I started to trace its origin.

Never having been farther west than Pittsburg, Pa., before coming to Minnesota, and having formed my impressions of

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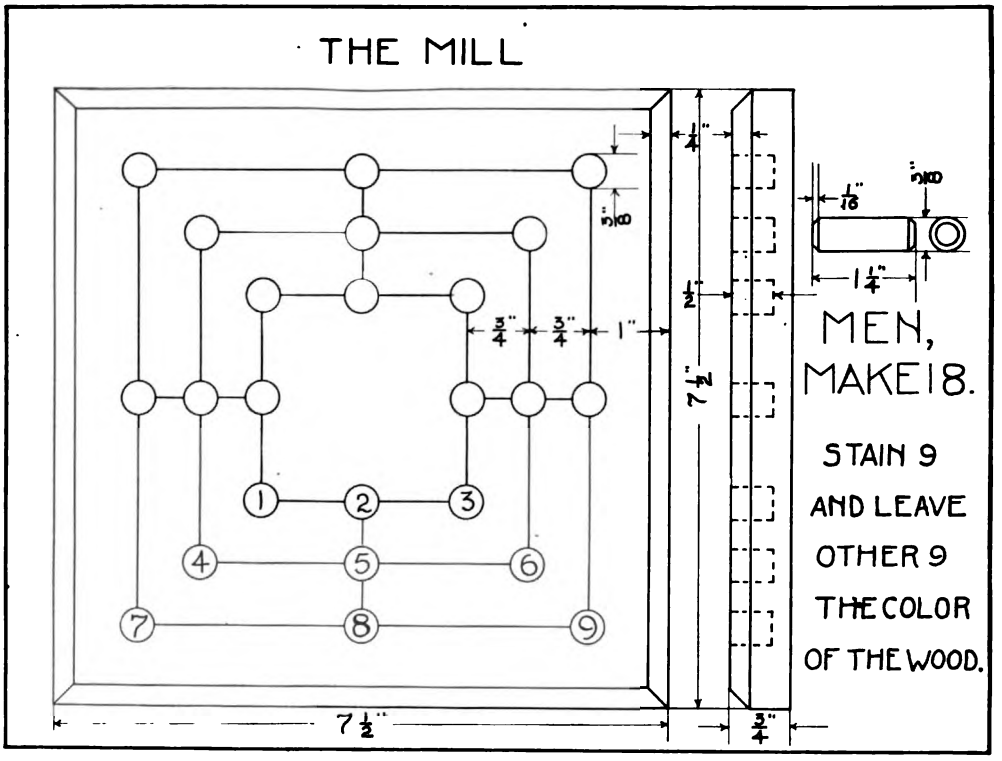
the Middle West thru text-books needing revision, I naturally associated this game with the Indians. I felt certain it was an Indian game when I saw two fine specimens of the game in the Indian collection of the Field Museum at Chicago a short time

The folds stand empty in the drowned field,
And crows are fatted with the murrian flock—
The Nine Men's Morris is filled up with mud.
Act II, sc. I, verse 98.

The plan consists of three concentric squares with lines connecting the middle



afterwards. The curator of the museum, however, gave me several references in which I found it to be an old English game.

Upon tearing down an English church built in the Thirteenth century, the workmen discovered a stone with the plan carved on it. When it was carved upon the stone they were unable to determine.

It was originally played out of doors, the plan being marked out on the ground and stakes or stones of different shape or color used for men.

Shakespeare mentions the game in *Midsummer Night's Dream.*

points of all sides as shown in the drawing. The circular spots are the playing points.

Checkers, buttons, pegs, or disks of paper may be used for men. The plan may be marked on a piece of paper or cardboard and buttons or checkers used, making it easy to obtain; or a more complete board may be made by making it out of ½" or ¾" stock, about 7½" square or larger, boring holes for playing points and using dowel pins about 1½" long for men. These should be shaped or colored so as to be easily distinguished.

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This makes a good problem just now for the boys to "do their bit" for the soldier boys. Quantity production or commercial methods may profitably be demonstrated in the making of several dozen or more.

The eighth grade boys in our junor high school made three dozen of these boards last fall for the boys at Camp Dodge, Iowa, and Maj. Dickerson, a member of our faculty then stationed there, said the boards were much appreciated and in constant use.

The Y. M. C. A. game tables we made for the army camps had one checker board design and one mill design painted on top instead of two checker boards, as the plans called for. This change was approved by Dr. Bawden.

DIRECTIONS FOR PLAYING

Two play the game. Each player has nine men distinguished by their color or shape. A coin is tossed to determine the starter. After the start, the players take turns in placing their men, one at a time, in any vacant point on the board, aiming to get three in a line on any side of the board, at the same time trying to prevent the opponent from getting three in a line. When a player succeeds in getting three in a line, he has formed a mill which entitles him to remove any one of his opponent's men not already a part of a mill. If the opponent has no other men than those forming a mill, a mill man may be taken, but not otherwise.

After all the men are placed, the game is continued by moving the men along the lines one space at a time (not jumping any men) continuing to form and reform mills until either or both players are reduced to three men.

As soon as a player is reduced to three men, he has the privilege of moving to any vacant space on the board, no matter where it may be. This gives him a slight handicap over the opponent and tends to prolong the game.

As soon as a player is reduced to two men, he has lost the game.

The line of a mill must be on the same side of the board and parallel to some side and not along a diagonal line. There are four possible mills on any side of the board. A double, or fig mill, consists of five men so arranged that a mill is formed with every move.

Some possible mills are *123, 456, 789* or *258,* but *741* and *369* are not mills.

One double mill, or fig mill 12346.

Moving 2 to 5 forms mill.

Moving 2 back forms mill.

This may be repeated until blocked by opponent.

For the benefit of those who may wish to make a further study of the game, the following bibliography will be helpful:

S. Culin, *Games of the North American Indians,* in 24th Annual Report, Bureau or American Ethnology, Washington, 1907, pp. 794.

J. Strutt, *Sports and Pastimes of the People of England,* London, 1898, pp. 416.

Report of National Museum for 1896, Washington, 1898, pp. 872.

S. Culin, *Korean Games,* Philadelphia, 1895, p. 102.

Century Dictionary, S. V. Morris.

Dictionary of British Folk-Lore, Part I. pp. 270.

To my thinking, the choice of subjects of study between the ages of six and eighteen is of much less importance than the choice of methods of instruction and discipline.

—CHARLES W. ELIOT, *President Emeritus of Harvard University.*

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EDITORIAL REVIEW OF THE MONTH

MANUAL TRAINING COMING TO ITS OWN

IN these days of war activity it is easy to realize that momentous changes in education are taking place, but difficult to see exactly what they are. We are conscious of the rapid movements about us, but it is not easy to see just what we are coming to beyond the next turn in the road. We know that some kind of a turn in the road is sure to come when the war closes; we cannot, and would not wish to keep on going in peace times just as we are now going in order to win the war. This fact invites a variety of extravagant prophesies: One man becomes so enthusiastic over industrial education, especially the particular work he is doing, that he says it will be impossible to go back to the old type of work again; the new thing done in the new way facinates him. Another engaged in similar war work rails against the hurry-up methods and the totally inadequate results. One writer prophesies a wonderful development immediately ahead for manual training; another issues a series of epistles on "the passing of manual training" because he regards it as "the education of autocrats, for autocrats and by autocrats."

At such a time as this it is well to remember to hold fast that which is good, while at the same time throwing the door of approval wide open to the good results of new experiences. The manual training teachers of the country would be strange people indeed if, while serving their country in the numerous positions of great responsibility in helping to speed up production and efficiency and developing mechanical skill, they did not learn many new lessons to apply after the war is over. It is probable that these lessons will give new zest, new emphasis to certain essentials, new methods of approach in teaching, new and more direct routes in training men for specific jobs. On the other hand it is not probable that anybody will discover a substitute for the big outstanding principles that have been behind the manual training movement from its beginning. What will probably happen is that some of the thoughtful workers will re-discover some of these very same principles.

It is not that we deplore this re-discovery, but we would point out that it is such, and that this same process of re-discovery has been repeated times without number by men growing thru experience in teaching a mechanical art.

This reminds me of something:

ON the first day of October in the year 1877, Dr. Calvin M. Woodward, then dean of the Polytechnic School of Washington University, St. Louis, made a report to the trustees of the University which is now a rare historical document. It was that report in which Dr. Woodward revealed his vision of the famous manual training school which came into being three years later. In this report he discussed the principles which should govern such "manual education," and the first of these was "mechanical analysis." He pointed out that analysis of subject-matter, whether it be in algebra, or music or forging, was essential as the basis of any proper teaching. By way of illustration he gave an outline analysis of "the forger's art."

With all our progress in teaching the mechanic arts since 1877 there are many would-be teachers—many of them good mechanics, many of them poor—who have not learned that this principle of procedure is fundamental in good teaching. The new war training courses have forced some to see and practice this analysis who never saw it clearly before. They have re-discovered something fundamental. After all there is nothing mysterious about it. If I dare

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to use a reference to religious experience, this whole matter is like getting into the Kingdom of Heaven: if you aren't born into it, you have to be converted. If a teacher isn't born so, and therefore analyzes unconsciously, he has to be taught to consciously analyze subject-matter and seek out its vital, life-giving principles before he can become a first class teacher.

And it was the recognition of this simple fact with reference to the manual arts that brought manual training into being. It is not likely that a second recognition of this fact which has come to some as a new vision thru the war work will result in the passing out of manual training, but rather the passing up into its own, into due recognition.

JOHN LOCKE saw only the superficial value of the manual arts in education —he did use the term "manual arts" in "Some Thoughts Concerning Education" published in 1690—but he did not speak or think in terms of manual training. In one place he said, "Other manual arts, which are both got and exercised by labor, do many of them by that exercise, not only increase our dexterity and skill, but contribute to our health too; especially such as employ us in the open air. . . . I should propose one, or rather both these; viz, gardening or husbandry in general, and working in wood, as a carpenter, joiner or turner; these being fit and healthy *recreations* for a man of study or business."

Locke's view so far as the purpose of teaching manual arts is concerned was the opposite of the vocational instruction in manual arts in these war times. Yet, so far as seeing the vital elements in teaching manual arts is concerned, many would-be teachers in industrial subjects in vocational courses—and in courses called manual training also—are still in the Locke era of pedagogic thinking with reference to the manual arts.

No, if the war work is going to witness the "passing of manual training" at all, it will be the passing upward into truer recognition, because the fundamental idea behind manual training is the fundamental idea upon which all good teaching of the manual processes—whether cultural or vocational,—must rest.

TRAINING TO OVERCOME THE LABOR SHORTAGE

ONE of the significant educational facts of the war is the success of the schemes for the training of men and women to occupy industrial positions requiring more or less technical skill. The effectiveness of modern pedagogic practice when applied to this problem has been demonstrated, and now the large industries are calling for further help. The systematic training of workers is recognized as a most effective means of increasing the production of war supplies. To stimulate this training work, the Department of Labor has announced the organization of a new division to be known as the Training and Dilution Service. The object is the training of unskilled workers, both men and women, to increase their competency and thus increase production.

As a further testimony to the effectiveness of such training the Committee on Labor of the Advising Commission of the Council of National Defense, of which Samuel Gompers is chairman, has authorized the following statement:

> The grave situation of the shortage of labor is being met by a new quick method of training operatives. All over the country one factory after another falls into line and puts in a training department to train its own people. To-day 100 important factories making war orders are proving that it is possible to train their own men, although they do not assume to teach a worker a whole trade in the brief time available. They do teach him by the methods of the training department how to master one process or one machine in a few weeks or a few days.

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Out of this experience in the intensive training of workmen, unless we are very much mistaken, is going to come some new and more direct methods of industrial training. Certain of the old type of academic courses adopted in vocational training will have to give way to the more vital ones being developed under the pressure of war emergency.

EMPLOYMENT MANAGEMENT COURSES

DURING the war, also, there has been developing a movement to standardize employment departments and to introduce employment managers into the large industrial plants. As stated in an announcement recently issued by the War Industries Board, "this movement is a resultant of progress in accounting, staff organization, functional foremanizing, vocational guidance, industrial training, new wage systems, safety first, hygiene and medical aid, and the use of the committee system of shop management." The functions of the employment department are being gathered under one authority so they may be handled in a more expert manner. Under the employment manager will come the work of giving mental tests and vocational guidance. He will direct, or at least have much to do with the industrial training of employes, and will have a large part in the working out of wage scales, checking minimum rates against the local cost of living and planning production bonuses. These are only a few of the items that are being turned over to the employment manager's department.

Several Government departments are interested in the development of employment management, and are behind the Employment Management Section of the War Industries Board that is conducting short, intensive training courses for employment managers in several of the leading educational institutions of the country. The courses are free of charge but the men admitted are very carefully selected. Among the places where such courses are to be given are Harvard University, Massachusetts Institute of Technology, Columbia University, Carnegie Institute of Technology, University of Pittsburgh, Case School of Applied Science, University of Cincinnati, University of California and the University of Washington. Applications are being received by Capt. Boyd Fisher, 717 Thirteenth St., N. W. Washington, D. C.

OPTICAL TRAINING SCHOOL AT ROCHESTER

THE Ordnance Department of the Army is establishing in Rochester, New York, a training school for operatives on precision optics. The school is to be located at the Mechanics Institute and the large manufacturing firms in that city are providing instructors and aiding in the installation of the necessary grinding and polishing and centering apparatus. Courses in the various branches of this industry will be given and extended for a period of six weeks. Workers will be paid during the period of instruction. On completion of the course, the student will be eligible to enter the optical munition factories and be competent to perform certain of the operations required. The largest factories are located in Rochester, Buffalo and New York City, New York; Boston and Southbridge, Mass.; Pittsburgh, Pa., and Dayton, Ohio.

This work will also be open to women who desire to do their share in war-munitions work. A good opportunity to enter this work is afforded by the optical training school at Rochester. Two schools of this nature were established in England some time ago and have proved most successful. As a result, the manufacture of optical munitions in England is well in hand, and many responsible positions are held by women.—*Newsletter.*

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A MUSEUM MADE MORE USEFUL

WE have long held the opinion that a museum should not be merely the place for a few casual visitors to enjoy an afternoon hour or two, or for a few experts to study the masterpieces of the past, or even for crowds of visitors to get inspiration and renewed spirit from contact with the beautiful, but that it should be, also, a schoolroom, a studio, a workshop where students and designers and workmen may study the best examples of the handicraft of the past, and make them a real factor in the designing and workmanship of the present. We are therefore pleased to notice that the Metropolitan Museum in New York City is taking another step in the right direction by offering a still larger degree of "cooperation and assistance to manufacturers of decorative art objects, from furniture and textiles to garments and jewelry." The following is from a recent statement sent out by Henry W. Kent, secretary of the Museum:

The Museum has established a department devoted specifically to the requirements of producers and dealers in industrial art objects, a department which will make every effort to render accessible the invaluable resources of the collections for the betterment of American design and craftsmanship. This office will be in charge of Richard F. Bach, of Columbia University, formerly one of the editors of *Good Furniture Magazine*. Mr. Bach's experience in the field, and especially his knowledge of the nature of the design problem as related to the requirements of manufacture and merchandising, will make it possible for manufacturers to obtain direct assistance, so that they may henceforth rest assured that there are no unmined treasures in the splendid Morgan and other collections to which they have not immediate access in terms of their own particular problems and requirements. It is planned to make this departure on the part of the Museum directly useful to all designers and producers, dealers and manual craftsmen engaged in any way in connection with the making or selling of furniture, fabrics, floor coverings, clothing, metalwork, woodwork, jewelry, laces and any other industrial art branches.

MODERN ESSENTIALS IN EDUCATION

IN AN article recently published in *Education,* Dr. Eliot, president *emeritus* of Harvard University, tells why he likes the Lincoln School, New York City. He says that it is an embodiment of changes in American education which he has advocated for years. Then he summarizes these changes in the following significant sentence:

Its general aims and objects I sympathize with completely, such as its commanding the children's attention, and getting hard work out of them by interesting them, its incessant demand for activity on the part of the children themselves, and for accuracy in all their mental and bodily activities, its insistence on the acquisition of some manual skill or artistic competency and of skill in narrative and exposition by every pupil, its implanting of the love of reading, and its fundamental conception that school is a place where children enjoy themselves so that they want to go early and stay late.

INDIANA PUSHING FORWARD

INDIANA continues to press forward with the program of industrial teacher training work under the Smith-Hughes law. It has been announced that Indiana University will carry on vocational teacher training in four centers in cooperation with local school authorities. These centers are Indianapolis, Evansville, Anderson and Richmond. Other centers are under consideration and will probably be in operation in the spring semester. The work to be undertaken in each of these centers is especially the training of shop teachers. Each applicant for admission must be a graduate of an elementary school, or have an equivalent education, and must have had "at least two years of successful experience beyond the apprenticeship stage" in the trade or vocation he wishes to teach. Beginning next summer, it is planned to offer courses for teachers of related subjects. It is expected that these will be of

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two types: one for graduates of a four year high school who signify their intention of becoming teachers of related subjects in vocational schools; and the other for teachers of mathematics, science, etc. in general high schools and higher institutions of learning who desire to teach their subjects in vocational schools.

To carry on this work the University has secured the services of Professor Edwin A. Lee whose headquarters is at Bloomington and Assistant Professor George F. Buxton whose office is in Indianapolis. Professor Lee came to Indiana from the Carnegie Institute of Technology where he was assistant professor of vocational education. Previous to that he was an instructor in the Ethical Culture High School, New York City. He is a graduate of the Chico, California, State Normal School and Columbia University where he received a B. S. degree in 1914 and A. M. degree in 1915. Before going to Columbia he was supervisor of manual training at San Rafael, California.

MR. BRODHEAD PROMOTED

THE recent changes in the personnel of the administrative force of the Boston Schools should be of special interest to advocates of manual and vocational training. Upon the retirement of Dr. Franklin B. Dyer as superintendent of schools, Frank V. Thompson was elected to this position. Mr. Thompson, formerly assistant superintendent of schools, has for a number of years been in charge of the manual arts and vocational work of the city. He has been particularly interested in prevocational centers, the continuation school, and the co-operative courses in high schools, and as superintendent, he will no doubt be able to further the interests of the pupils in these courses.

John C. Brodhead, formerly associate director of manual arts, has been elected to the position of assistant superintendent of schools, and will take over the administration of the manual and vocational activities formerly assigned to Mr. Thompson. Inaddition, Mr. Brodhead's assignment includes the Mechanic Arts high school. Those who have been associated with Mr. Brodhead appreciate the wisdom of the School Committee in its choice. Boston is fortunate to have had in the field of manual training a man who, aside from his special interests, has developed in such an all-round manner as to be recognized as particularly qualified for the administration of the varied problems of a large city school system. Mr. Brodhead has a keen and sympathetic insight into the problems before him. His exceptional administrative ability and untiring energy, together with a record of accomplishment behind him, are assurances that as assistant superintendent his influence will be felt in the right direction.

Edward C. Emerson, formerly assistant director of manual arts, has been promoted to first assistant director, and will assume the duties as head of the manual and vocational activities of the department which Mr. Brodhead had as associate director.

A little attention is now given in many American schools to the elements of science, to certain subjects generally called vocational, and to drawing and music; but the proportional space which all these subjects taken together occupy in the ordinary programmes is still deplorably small.

—CHARLES W. ELIOT, *President Emeritus of Harvard University.*

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WASHINGTON CORRESPONDENCE

EVENING CLASSES FOR GOVERNMENT EMPLOYEES

THE most interesting educational development in Washington during the past month is the inauguration of a plan for offering evening classes for government employees. It has been estimated that there are in the neighborhood of 100,000 employees in the service of the government in Washington. A very large proportion of these are graduates of high school, and many before coming here had entered upon courses in colleges, universities, and normal schools, which courses were interrupted to accept service in the government.

The experience of public and private educational institutions in Washington shows that a considerable number of these employees will welcome the opportunity to use a portion of their free time in increasing their usefulness and efficiency, and thus fitting themselves for promotion, and in furthering their own intellectual development. At the same time, the existing educational facilities here are wholly inadequate to meet the situation effectively.

Upon the initiative of the Commissioner of Education a special committee of about 40 members was organized, consisting of representatives of all the government Departments, Commissions, and Administrations, as well as local public and private educational institutions, to consider the desirability of providing educational opportunities during the coming months on a more comprehensive scale than has been attempted hitherto. At a meeting of this committee in the latter part of September, a sub-committee of seven was appointed to make a preliminary investigation for the purpose of determining the probable demand.

QUICK ACTION WITH A QUESTIONNAIRE

AS secretary of the sub-committee I had the opportunity of assisting in the drafting of a questionnaire to be used in making this preliminary inquiry, and incidentially of observing the inside working of one of the temporary government agencies. The business manager of the U. S. Fuel Administration, R. S. Neely, who was manager of the branch factory of the Ford Motor Company at Long Island City, N. Y., is a member of the sub-committee, and volunteered to assist me in geting the job thru the printing office.

After two meetings of the committee I went to Mr. Neely's office on a Thursday afternoon to complete the final arrangements. About four o'clock he called in Mrs. White, chief of the Fuel Administration division of publications, and we gave her the manuscript copy and explained what was wanted. The questionnaire, together with an accompanying letter of instructions, required both sides of a form 18"x11", folded to make a four-page leaflet 9"x11". Mrs. White at once got into a waiting automobile and started for the Government Printing Office. The page-proof, containing only one error, by the way, was ready for us before one o'clock on Friday, and delivery of 100,000 copies was promised for Saturday afternoon. As it happened, a special emergency job from the White House went down on Saturday, causing postponement of everything that could wait, but we got our work on Monday afternoon. And I thought I knew something about printing!

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UNIQUE EVENING SCHOOL PROJECT

RETURNS from the questionnaire have been delayed somewhat because of serious interruption of the service due to the influenza epidemic. Indications are, however, that the total number of students applying will be very large. If means can be found to meet the demand, Washington will undoubtedly lead all other cities in the country this winter in the magnitude of her evening school project. In one department alone, the War Department, upwards of 5,500 employees have applied for instruction in more than 75 different subjects.

As soon as the facts brought out by the questionnaire investigation can be tabulated and summarized, the inter-departmental committee having the matter in charge will meet to consider ways and means for dealing with the situation disclosed. It is quite likely that a special appropriation from Congress will be sought, in order to make possible the organization of a comprehensive system of evening classes. Full use will be made of the resources of the government and of local public and private educational agencies, and the attempt will be made to offer opportunities for instruction at the most convenient times and places for the largest numbers of individuals.

NEW ACTIVITY OF THE BUREAU OF EDUCATION

SO many superintendents, principals, and teachers have left their positions to go into the government service, or to accept employment in business and industry, that the scarcity of properly qualified persons to run the schools has become a serious national problem. Figures collected by the Bureau of Education within the past few weeks show an approximate shortage of 30,000 teachers in the public schools. I have seen other estimates of the shortage of teachers ranging as high as 100,000 for the entire country. In many cases it is known that schools have not opened this fall because of the impossibility of obtaining teachers.

Secretary Lane and Commissioner Claxton presented to President Wilson such facts as were obtainable late in September, and the President promptly set aside the sum of $25,000 from his national defense fund to establish a School Board Service Section in the Bureau of Education. The Bureau is now setting up the machinery to meet the calls coming from prospective employers.

A NATIONAL TEACHERS' REGISTER

IN a statement just made public Commissioner Claxton says:

Local and sectional agencies, however numerous, cannot meet the demands; only a national agency that can register teachers from all parts of the country and report to school officers everywhere can do so. Because of its long-established relations with education offices of all kinds everywhere in the United States and its intimate knowledge of qualifications required of various kinds of teachers the Bureau of Education can perform this service more economically and more effectively than any other agency now in existence or any new agency that can be created, and such service is clearly within its function as set forth by the act by which it was established.

One of the first tasks of the new service will be to develop new sources of supply. Many men and women who have left the work of teaching for one reason or another must be induced to return, and it will be necessary to find many others, properly qualified, who can and will serve, at least until the restoration of normal conditions.

This service will be developed just as rapidly as is consistent with efficiency, and will, of course, be without cost both to teachers and boards of education and other school officers. The Bureau, for obvious reasons, can not undertake to recommend any teacher for any position. It can, however, report names and addresses and records of education, experience, and other qualifications.

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In carrying out the task of registering teachers, and assisting school officers to fill vacancies, the Bureau of Education will seek the cooperation of state boards of education, and state, college, and normal-school placement agencies.

CONFERENCE OF SPECIALISTS

PLANS are underway at this writing for the ninth in a series of conferences of specialists in the training of teachers of manual training and industrial subjects, from institutions located in the north central and south central states, to be held at the State Normal School, Terre Haute, Indiana, December 5, 6, 7, 1918. The conference is organized under the auspices of the Bureau of Education, and the preliminary announcement invitation has been sent to those entitled to be present. The conference will not be held unless at least twenty men agree to attend. A strong program is in preparation.

TRAINING THE FIGHTING MECHANIC

SUPPLEMENTING the accounts I have already given in these pages of the work of the Committee on Education and Special Training of the War Department, I am now able to give some interesting figures as to the number of soldiers in training in mechanical trades and industries. A few days ago Colonel Rees showed me a list of the educational institutions concerned, with the number of men detailed to each and actually under instruction on August 1st, 1918. From these sheets I have made the following summary:

The total number of soldiers receiving instruction on that date was 52,025, in 35 different trades and occupations; the number of cooperating institutions was 144, located in 46 states and the District of Columbia. The following list shows the trades to which the largest numbers of men have been assigned:

Auto mechanics	17,974
Auto drivers and repairmen	6,100
Radio operators	4,324
Carpenters	4,075
Electricians	3,363
Bench woodworkers	2,597
Blacksmiths	2,242
Machinists	2,212

Most of these institutions are operating under contracts which call for full utilization of their facilities for this work until June 30, 1919. By that date, it is estimated, more than 300,000 soldiers will have received instruction in these two-months courses, sufficient to make them definitely useful in the various mechanical departments of the military service. The record is one that may well cause satisfaction to the Committee on Education and Special Training, and justifiable pride on the part of the educational institutions, directors, and instructors concerned.

There never was a time in the history of the world when the protection of children was more needed than at the present time. It is therefore of supreme importance that the children who are just coming into manhood and womanhood should not have their physical resistance sapped by excessive hours of work or their education cut short by premature graduation into industry.

—Woman's Committee, Council of National Defense.

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IN FOREIGN COUNTRIES

DURING the period of reconstruction after the war, this Magazine will aim to keep its readers in touch with the main events in manual and industrial training in the Allied Nations. Plans are now being made to extend the field of the Magazine in this direction because it is believed (1) that the strong bonds of union between the nations holding democratic ideals should be made permanent, (2) that the kind of education for which this Magazine stands is going to increase rapidly after the war, and (3) that in the new development of the reconstruction period, an exchange of ideas between nations, as well as between states and schools and individual teachers, is necessary to obtain the largest and securest results.

From time to time during past years this Magazine has published facts concerning important events in the field of manual training and vocational education in foreign countries—especially in England. For two years we had a regular London correspondent. At an earlier period, we published a series of articles giving the Editor's observations in European schools. At other times, we have published articles on foreign industrial schools and systems of instruction in manual training. What is contemplated now will not be a radical departure from the previous policy, but it will be the result of a definite search for foreign items that are significant to American readers interested in industrial education.

In starting this new emphasis we are fortunate in being able to announce four articles by exchange arrangement with the editor of the official organ of the National Association of Manual Training Teachers of England, Mr. F. H. Knowles. We have just received word that he will write on the following subjects:

(a) How the War has Affected English Education
(b) The English System of Education and Manual Training
(c) Reconstruction in English Education—Manual Training Essential
(d) What of the Future?

Mr. Knowles is an able writer. He has a fine appreciation of the spirit of America's cooperation in the war. He believes that thru this the English-speaking race has been united in the cause of freedom and democracy. He believes, too, that England, in her task of developing secondary and vocational schools, can learn something from America. And he is willing to help us in America to benefit by the lessons England has learned thru her years of experience in manual and industrial training.

We are very sure that our readers will look forward with keen interest to each succeeding article by Mr. Knowles.

A REMARKABLE development in vocational training is taking place in China. This was referred to in one of our recent numbers. In an early issue we will publish a far more complete statement of this movement written by C. H. Chuang, a Chinese writer on vocational education and the author of a book on woodworking. At the present time, Mr.

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Chuang is a student in pedagogy at Miami University.

South America, also, is waking to the needs of industrial education. From that source—especially from Brazil and Argentine—we expect reports in the near future that will reveal a development of great importance.

In addition to such articles as are mentioned above, we hope to print occasionally a page or two of briefer items such as those which follow.

NEW EDUCATION LAW IN ENGLAND

REFERENCE has several times been made to the Fisher bill which became a law on August 8, 1918. Some of the points in this law which are of special interest to our readers are the following:

(1) Compulsory day continuation schools shall be established for all young persons, unless they are being otherwise educated, up to the age of 16, and after 7 years from the appointed day up to the age of 18.

(2) The minimum number of hours of attendance at continuation schools shall be 280, and after seven years 320.

(3) No child under 12 shall be employed.

(4) No child between 12 and 14 shall be employed for more than two hours on any Sunday, or on any school day before the close of school hours, or on any day before 6 a. m. or after 8 p. m. Exceptions may be made by by-law, provided that no child may be employed for more than one hour before school, and if so employed, for more than one hour in the afternoon.

(5) Local authorities may make provision for the supply or maintenance of holiday or school camps, centers for physical training, school baths, swimming baths, and other facilities for social and physical training.

(6) Provision is made for the medical inspection and treatment of pupils in secondary and continuation schools.

THERE is ample evidence that England "meant business" when she passed the Fisher bill. Already some communities are anticipating the provisions of the bill by making large plans for the future. Reading the accounts of what is under consideration, one is impressed with the fact that hardly any two cities are planning to meet the provisions of the law by the same scheme. This is as it should be; a national law should be so framed as to allow individual communities to develop their individualities industrially, and that means educationally, when industrial education is under consideration.

As an illustration of one of these local schemes, the Education Committee at Hull has under consideration some comprehensive changes in the technical instruction of that city. It realizes the importance of developing "a complete system of scientific and technical education in vital touch with commerce and industry" if the full benefits are to be derived from the new education law. A sub-committee has discovered that the existing technical college, if it were to be open about 50 hours a week, would just about accommodate the part-time continuation classes called for under the new law. It points out that the new part-time courses will be far more efficient than the present evening classes, and that they will probably produce a far larger proportion of students 18 years of age wishing to take up more advanced work in evening classes. To meet this demand and to provide for students coming from secondary and junior technical schools would require a complete system of advanced evening classes.

The Committee therefore concludes that "a new institution will be required to provide advanced work in engineering and scientific subjects, as well as in technology, commerce, and general subjects, of a standard approximating that of a university degree. It believes that it will be "necessary, also, to provide for consultation and experimental work, more particularly with regard to local industries, and this will need to be carried out on a scale and in a way similar to those actually found in the in-

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dustries, while provision will also have to be made for investigation and research work within the purview of pure science and local industrial and commercial practice in close cooperation with local employers."

It is suggested, therefore, that this new institution should provide for work of the following different grades:— (*a*) Advanced full-time courses for boys and girls from 16 to 19 or 20 years of age; (*b*) research courses for single students working in connection with local employers in pure science, engineering, applied and analytical chemistry; and (*c*) junior courses for boys from 12 to 16 years of age in the engineering and chemical trades, the building trades, and in commerce, these courses probably to be based on a secondary school curriculum with a bias towards the trades indicated, and to be distinct from, though part of, the same general scheme as those held at the Technical College proper. In summing up, the committee states that, though it may appear to some that the scheme is larger than is warranted by the needs and resources of the city, yet the possibilities of progress in Hull, if its great natural advantages and communications can be supplemented by a population fully equipped with the best scientific knowledge and trained technical skill, are very great, and that the necessity for scientific equipment in the commerce of the future cannot be gauged from its limited employment in the past.

RELATION OF EDUCATION LAW TO APPRENTICESHIP

THE Education Committee at Barrow-in-Furness, England, proposes to establish a junior technical school, providing a course of full-time instruction for pupils between the ages of 14 and 16 years.

In view of the fact that the course of instruction will extend until the pupil has reached the age of 16, employers are recommended to fix the age of 16 years as the minimum age for entry on apprenticeship, and to give preference in admission to apprenticeships to applicants who have been until the attainment of that age in full-time attendance at schools approved as efficient by the Board of Education and the local education authority. They are also asked to discourage the entry of boys under the age of 16 years into their works for any description of employment, and to make arrangements for the half-time attendance at approved courses of technical instruction of a limited number of apprentices who display special ability, such instruction to be available between the ages of 16 and 19 years, and to pay full wages to apprentices so selected during the period of such instruction. It is further hoped that employers will approve, in the case of specially meritorious students of 19 years of age and upwards, full-time attendance at a university or approved college offering an advanced technological training, such attendances to be subject to conditions to be prescribed by a scheme still to be drafted. These recommendations anticipate, to a great extent, the provisions as to continued education contained in the Education Bill.

ENGLISH CITIES PROVIDE INSTRUCTION FOR DISABLED SOLDIERS

TECHNICAL classes for disabled soldiers and sailors are now in operation in many English cities. Leeds has established classes in boot making and repairing, and electrical work, including armature winding, and has plans for opening classes in engineering, oxy-acetylene welding, sanitary inspector's work, telegraphy, linotype operating and tailoring. Durham has considered the opening of classes in bootmaking and repairing, tailoring, dental mechanics, industrial chemistry, and electrical work. Plans are under way for classes in boot and shoe making at Chester. It is stated that "out-of-pocket expenses" specially incurred for the purpose of the classes, such as teachers' salaries and the extra cost of raw materials are borne by the Ministry of Pensions. The ordinary administrative expenses are born by the local committee.

In Nottingham where boot and shoe making and repairing are taught, the Ministry of Pensions pays also 100 pounds during the first year for rent of the building it became necessary to hire.

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SHOP NOTES AND PROBLEMS

ALBERT F. SIEPERT, Editor

SOME SECRETS OF SOLDERING

AS THE Christmas time draws near and the toy repair department gets into shape the solder and soldering iron should not be forgotten. With a little knowledge of solder and how to use it, many toys may be repaired that would otherwise have to go unmended. Not only in the toy department but in many places the teacher will find use for solder.

A good blow torch is a necessity in every shop. The quart size is to be preferred as it holds more fuel and will heat the iron more quickly. Only the best quality of high test gasoline should be used.

The method of numbering soldering coppers is sometimes confusing. Coppers are sold by the pair and are numbered in accordance with the weight of both irons. Thus in speaking of a one pound copper a pair is always meant, and each iron weighs one-half pound. Each iron is numbered No. 1, signifying that a pair weighs one pound. Likewise a No. 2 iron, signifying that the pair weighs two pounds. The No. 2 size will be found about right for general use. The smaller irons lose their heat too quickly and should be used only where the character of the work demands.

Solders are alloys used in joining the edges and surfaces of metals. They are composed of varying proportions of metals according to fusibility of metals to be joined. The ordinary soft solder used by tinners is composed of equal parts of tin and lead. This may be purchased at any hardware store and will be found very satisfactory.

In soldering, the surfaces to be united must be made perfectly clean and free from oxide. This is commonly done by scraping the surfaces; and in order that the formation of any oxide may be prevented during the process, acid, borax, sal amoniac or resin is used. The common acid used by most tinners is made in the following manner:—

To a quantity of hydrochloric acid add as much zinc as the acid will take. Hydrochloric acid, when applied to a metal, has no oxidizing effect and is, therefore, an ideal soldering acid.

Care should be taken to keep the acid clean and it is best to keep it sealed when not in use. A little care in this matter of cleanliness all around will help solve many of the vexing problems of soldering.

Besides having clean acid and clean parts the soldering copper must be kept clean and well tinned. A carbon deposit will collect on the iron from the burning gasoline in the blow torch. This must be removed by wiping the iron on a damp cloth occasionally or, if it becomes hard it may be removed with a file. The following method of tinning a soldering iron was given me by an experienced tinner, and since using it, I have had no trouble in getting good results.

Secure a large piece of sal amoniac. Heat the iron to a fair heat. Rub the iron over the lump of sal amoniac until the entire point of the iron shows a bright copper color. Heat the iron hot enough to melt the solder. Melt a few drops of solder and rub this over the sal amoniac with the hot iron. The solder should spread out over the iron and leave the point a bright silver color. If the iron is now touched to the solder, small globules of the metal should cling to the point. If the metal does not cling, the iron is not properly tinned.

Having tinned the iron, place it on the torch to heat. Care should be taken that it does not get too hot. Never let it get red. Use just enough heat to melt the solder quickly. When the proper heat is reached and all parts to be joined are clean and have an application of acid, touch the iron to the solder and apply directly to the parts. Touch carefully and do not overheat. At first the solder will show a bright silver color, and will be seen to run along the seam. When the solder flows on the parts, remove the iron and hold parts until the solder takes on a dull satin finish. The parts should now hold and the repair is made.

—A. W. DRAGOO, *Director of Manual Arts, Township High School, Arthur, Ill.*

SUGGESTIONS FOR WOOD-CARVING

In Vol. XVII of this Magazine, on pages 110 to 115, there was told the story of a simple type of geometric wood-carving well suited to manual training classes. The article, which was entitled "Easy Wood-Carving," was illustrated in such a way as to show the method of cutting the design and the method of laying out designs to suit given spaces. The suggestions

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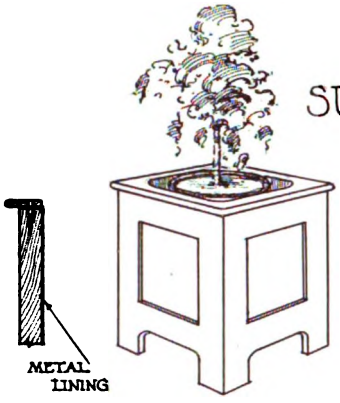
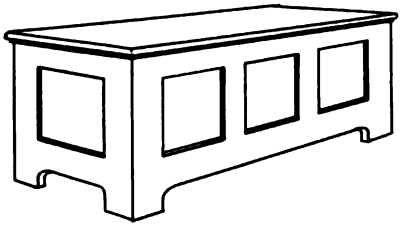
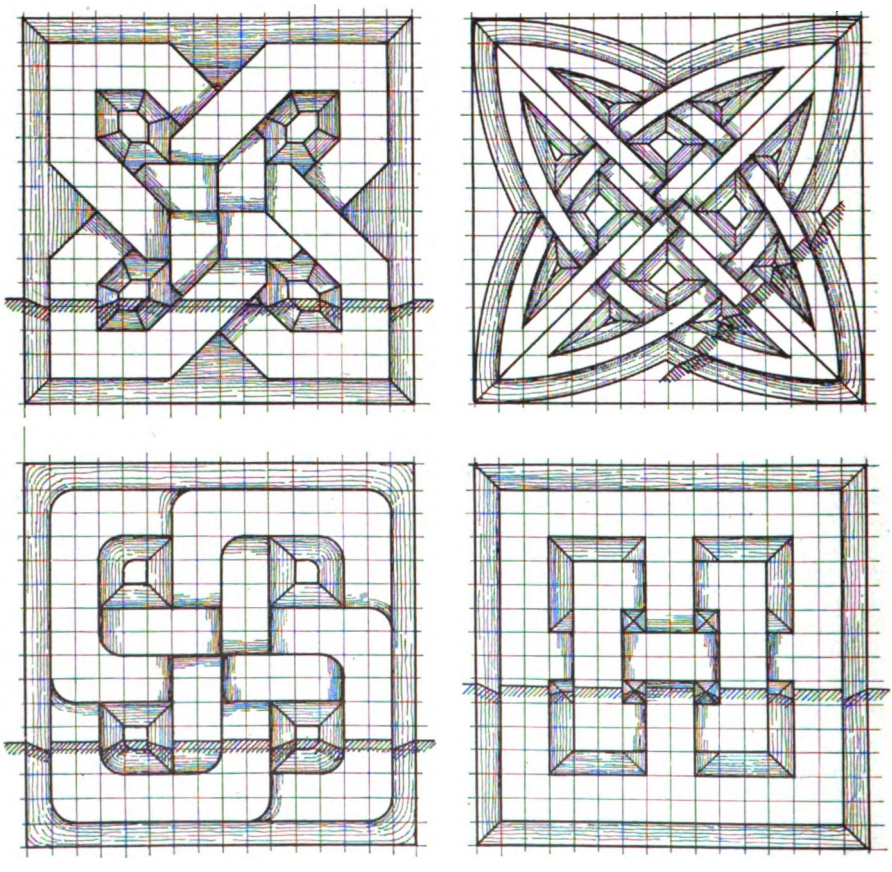
CARVING SUGGESTIONS



FLOWER POT STAND



CHEST



DESIGNS FOR PANELS

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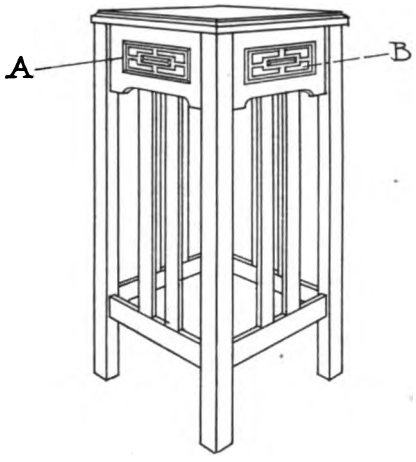
DESIGN FOR CARVED PANEL



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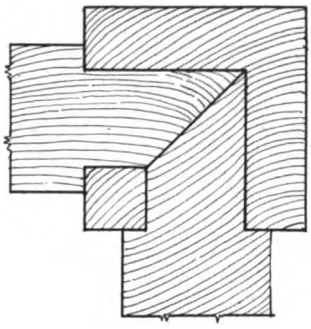

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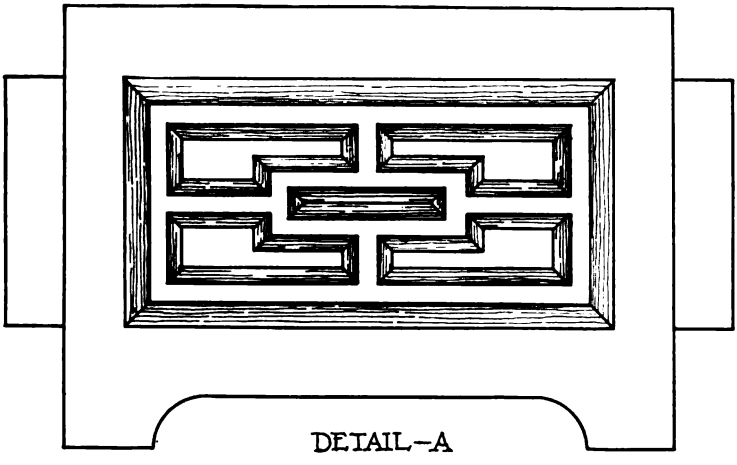

DETAIL—A

given in the accompanying drawings are the results of a further study of this type of carving. The three interlaced patterns for window boxes were designed by Miss Adelaide Mickel of Bradley Institute.

A CHICKEN COOP

The chicken coop shown here was the result of a request for a chicken coop which could be easily moved from place to place, easily cleaned, and which would protect the brood from drowning during a heavy rain. The size given here was found very convenient where an incubator was used and a large number of chicks were placed under a hen. It was large enough to take care of twenty-five chickens until they were ready for the large house with the old chickens. The expensiveness of the construction has often been balanced by the number of chicks saved during one heavy shower, besides being much more attractive than the ordinary box or barrel.

The coops were made from both cypress and soft pine but may be made from any material

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that is not affected much by moisture. When pine was used, the bottom sides, ends and cleats were given a good coat of wood preservative and the roof and sides given two coats of paint to correspond with the chicken house. When built of cypress the coop was given just two coats of paint.

The two eyes were used to hold the door shut at night and to hold it open from the winds during the day, as you can see from their location in the front and rear detail.

The front and rear were first constructed. The bevel on the top edges is four inches in twenty-five inches. The cleats were nailed on and the door cut after the ends were nailed on. The ventilating holes were bored before these were assembled. The distance the corner cleats are placed from the edge depends upon the thickness of the material used in the construction. The corner cleats may be made from ⅞" stock if the other material is not in the school. They should then be made about 2" wide.

The heavy cleats used in the top are to protect it from the rough handling it is liable to receive when moved from place to place.

The bottom is made ⅛" smaller in length and width to allow a space around the edge for the folding of the paper and for a slight variation in the expansion of the bottom and top during damp weather. A quarter of an inch may be allowed for the length if it seems necessary, but too great an allowance makes it easy for the chicks to become fastened there.

BILL OF MATERIAL

Part	*No. required*	*Size*
Top	4	⅞"x10"x32"
Top strip	3	¼"x2"x32"
Top cleat	2	⅞"x3"x34"
Front	2	⅞"x10"x36"
Back	1	⅞"x6"x36"
Ends	4	⅞"x8"x24"
Ends	2	⅞"x4"x24"
Bottom-top	1	⅞"x23⅞"x34⅛"
Bottom-side	2	⅞"x2"x34⅛"
Corner cleats		¼"x1¼" (2-16";2-2";4-2")
Door cleats	2	⅞"x2"x14"
Hinges	1 pr.	1¼"
Hook	1	
Eyes	2	
Nails		6D and 4D

To keep the coop clean, papers were spread over the bottom before the side was placed on and then all that was necessary to clean it was to remove the top and side and take off the paper from the floor and spread new on it. The papers were changed about three times a week.

PAUL E. HOLMES,
Manhattan, Kansas.

CRUTCH

The eighth grade boys of Louisville are devoting their shop periods to the construction of various Red Cross articles, such as canes, invalid tables, beaver-board trays, checker boards, game boards, dominos, knitting needles and packing boxes. One of the projects is the crutch shown in the drawing which is being made for the soldiers in Camp Taylor hospital. The processes emphasized are sawing and spokeshaving. In constructing the crutch, it is well to plane and spokeshave until the body is oval except at the bottom, which is round, and ⅞" in diameter. Then the stick is rip-sawed down the line XX as shown to hole near the bottom. Then a flat-head stove bolt is put in the holes, and both head and nut are countersunk. The two halves are next spread, top and handle are put in place, using 1¾" round head blued screws for the handle, and glue and brads for the top. Finish with one coat of filler and two of shellac.

Maple gives the best satisfaction for the crutch, while oak may be used for the top. Finish with one coat of filler and two of shellac.

ROBT. F. SMITH,
Louisville, Ky.

JEWEL BOX

This jewel box with its turned inlays was made by a student in the class in ornamental turning at the high school Emporia, Kansas. It was done under the supervision of T. G. Bashaw, director of manual training in the city schools.

BLACKBOARD TEE-SQUARE

After trying numerous schemes without success, the following plan was evolved. Take a seven-foot spring map roller in good condition and a 3" straight edge of the same length. Fasten the two together with two strips of shade material. The rabbited guide strips prevent end

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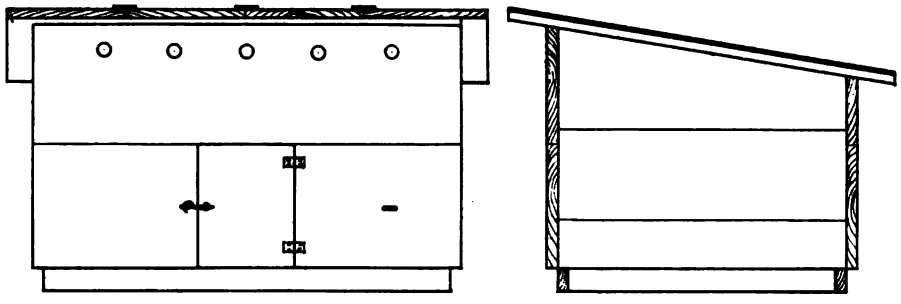
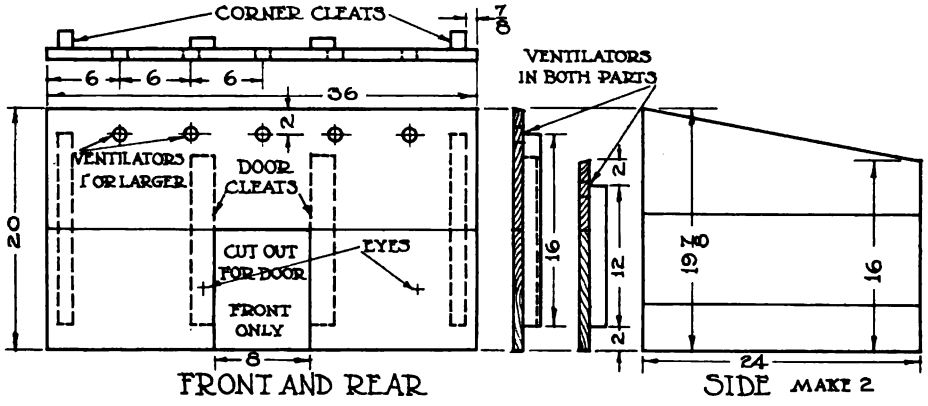
CHICKEN COOP



FRONT AND SIDE VIEWS



FRONT AND REAR

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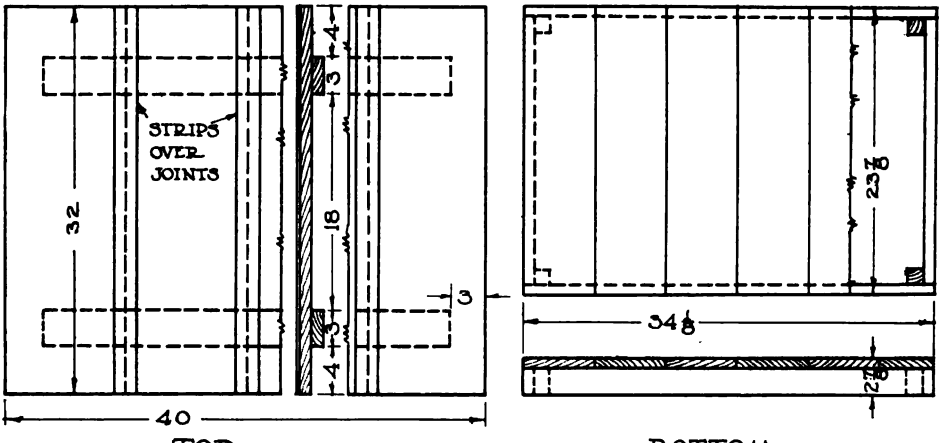

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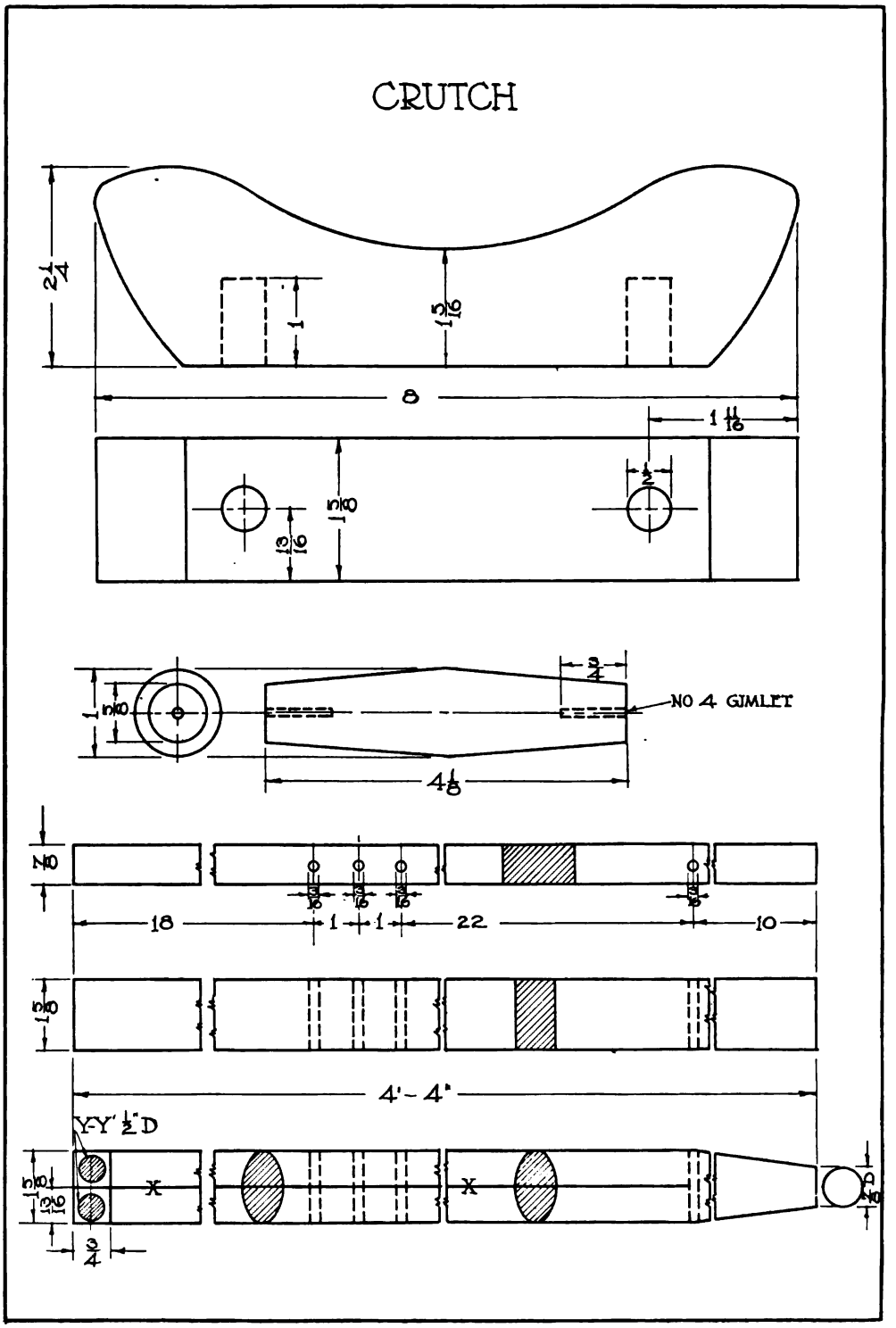

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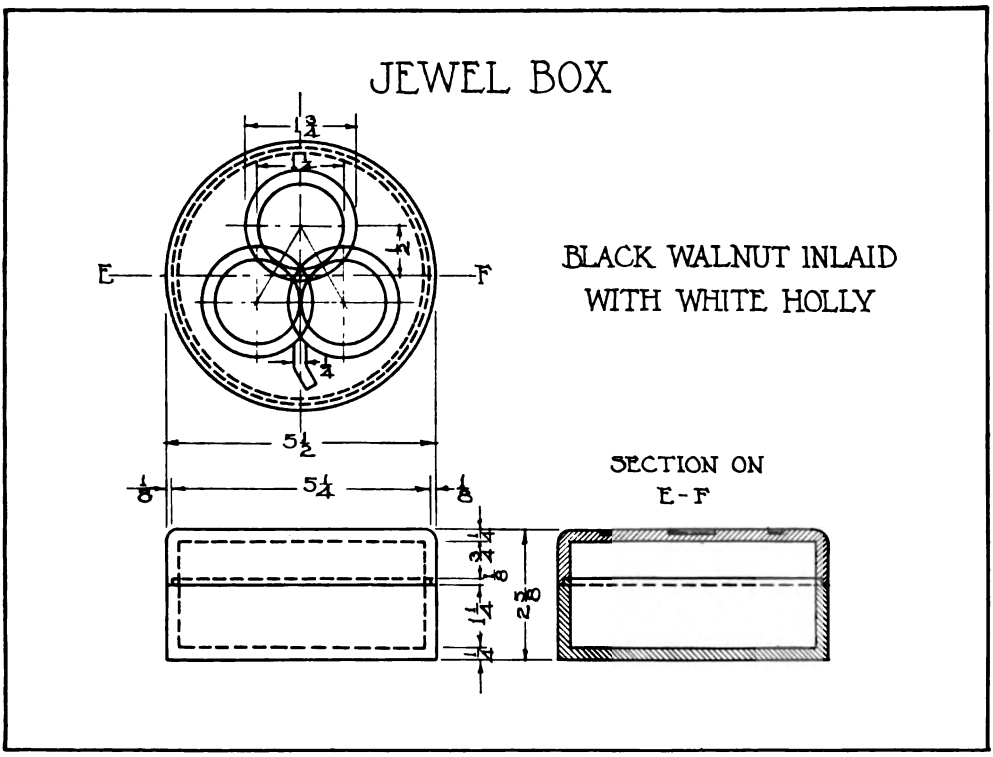

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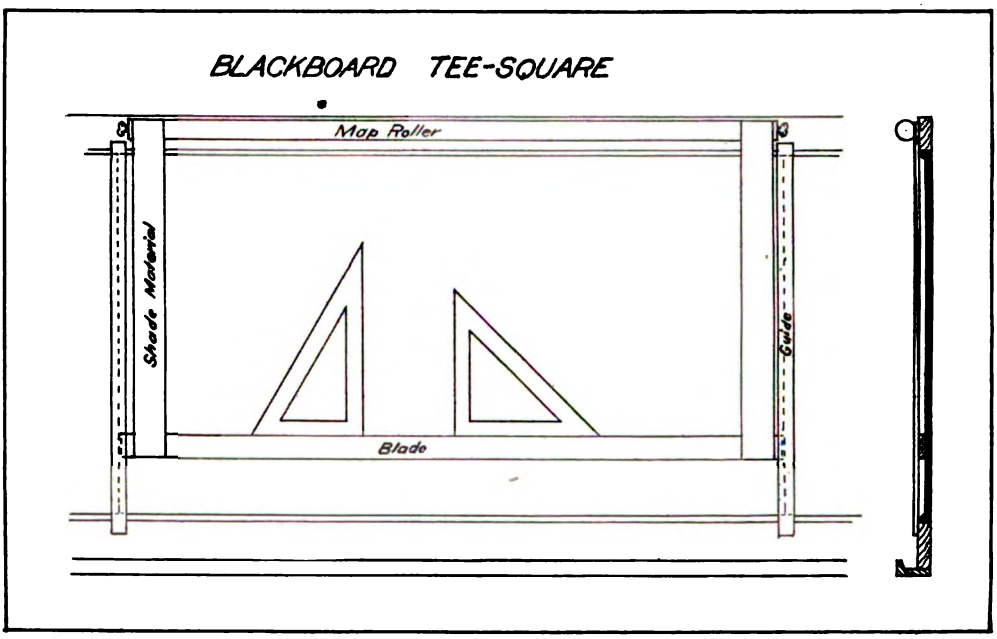
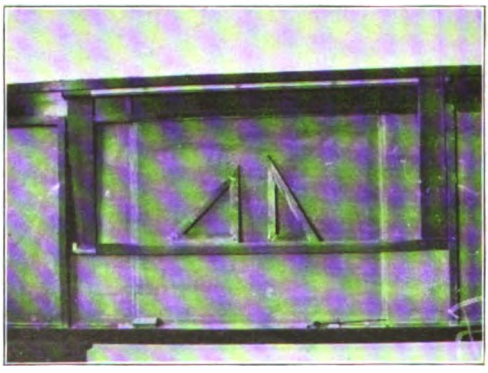


play and hold the blade close to the board. The ratchets hold the blade in position about every four inches, where the triangles may be used as on a drawing board. The blade is held in place with the left hand if horizontal lines are to be drawn near together.

C. D. CORNELL AND S. M. CRESSE,
O. W. Holmes Jr. High School,
Philadelphia, Pa.



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CURRENT PUBLICATIONS

Apprenticeship and Apprenticeship Education in Colonial New England and New York by Robert F. Seybolt, assistant professor of education at the University of Wisconsin. No. 85 in Contributions to Education, published by Teachers College, Columbia University, New York City, 1917. Size 6x9 in.; 121 pages.

Here is a valuable book for the industrial education specialist and for the educator who is interested in the problems of practical industrial training in their relation to the general studies of the elementary school curriculum.

In the first chapter Professor Seybolt sets forth the leading characteristics of apprenticeship as it developed for approximately five hundred years in England, ending with the Poor-Law Amendment Act in 1834. Then, with the English practice as a background, the author discusses in succeeding chapters the apprenticeship laws and practice of Colonial New England and New York. He points out especially that in New England the colonists were not satisfied with the practice of Old England, so far as the educational requirement was concerned. The American ideal was to provide in some way an elementary education for every child, and this came to be a part of the obligation of a master to his apprentice. "Labor and learning" expresses the ideal in the Massachusetts law of 1642. "The inhabitants of Massachusetts Bay saw in the apprenticeship system, already established, an effective instrument for compelling the education of all youth." Later, in 1703 "a Poor-Law was enacted which required that poor-apprentices be taught to read and write."

Professor Seybolt makes it clear that this apprenticeship legislation "constituted the first compulsory education law in America," and he adds, "it is worthy of note that it was not until two centuries later that the State of Massachusetts passed its first compulsory education law." "The apprenticeship system took care of the entire problem of public elementary education during the Colonial period." The masters were required to teach their apprentices reading, writing, and cyphering or they must pay tuition charges for such instruction.

Creative Impulse in Industry. By Helen Marat. E. P. Dutton & Company, New York, 1918. Size 7½x5 in. 146 pages; price $1.50.

As a sub-title this book has the following: "A Proposition for Educators." The preface is signed by the Bureau of Educational Experiments which at once gives the book a certain standing in the reader's mind and raises his expectations. The preface states that one of the surveys made during the past year by the Bureau has resulted in this book.

In the chapter on "Production and Creative Effort," the author describes modern industrial institutions with reference to motive. This she finds to be possession of material things and not desire to create or to supply a need. In the second chapter she discusses scientific management of industries in a very interesting way, calling attention to its limitations. She points out that it fails to give full value to the human factor in industry. One of the strongest things in the book is the testimony of a factory manager who accomplished the result aimed for, not by "scientific management" methods, but by "giving meaning to a meaningless task."

In the third chapter on the German methods and motives in industrial education, one feels that the author has not done justice to American efforts in industrial education. One cannot help wondering where she obtained the data on American schools which enabled her to generalize so fluently and say, "The movement here has shown little imagination as it adopted a system foreign to America, instead of initiating schemes which represented the aspirations of a free people." Dean Schneider's work at the University of Cincinnati and the schools at Gary are the only exceptions she mentions.

The fourth and last chapter outlines a suggestive scheme for operating a school and productive factory under the same management.

As a whole, the book is stimulating but not convincing. Perhaps this was the author's intention.

A Practical Course in Wooden Boat and Ship Building, by Richard M. Van Gaasbeek, head of Department of Woodworking, School of Science and Technology, Pratt Institute, Brooklyn. Published by Frederick J. Drake & Company, Chicago, 1918. Size, 5x5½ in.; 204 pages; price, $1.60.

The necessities of the world war have made us a nation of ship builders over night, as it were. The need for a textbook to assist the great army of house carpenters and other woodworkers in transferring from their usual occupations to the wooden boat and ship building industries, has brought forth this book. It is

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the outgrowth and development of a pioneer course organized early in the war by Pratt Institute in response to the demand for skilled labor in these industries.

It was impossible to build a full-size ship, but a full-size boat was built, for whatever the size or type of the vessel, the general principles of construction remain very much the same. Chapters I to IV of the book give the operations in sequence as they were performed on the job, and explain them in such a way that the average mechanic can understand. In Chapters V to VIII typical ship construction views are shown, giving the reader an idea of the methods of handling and fastening heavy timbers. A complete list of the hand tools and their uses in connection with ship and boat building is given in Chapter IX. An interesting feature of the book is the ship building terminology given in Chapter X.

Organized Manual Training for Grades—Paper Box Making for Grade Two, by Clinton S. Van Deusen. Published by The Dobson-Evans Company, Columbus, Ohio, 1918. Size, 5⅜x7¾ in.; 16 pages.

For the teacher of elementary manual training, this little book offers a very helpful course. It covers eighteen problems of paper boxes of various shapes and sizes, with minute instructions for making each one. The book appeals especially to teachers of limited training in this work, and the introduction has been written with their particular needs in mind. Rural school teachers will find it very helpful.

Cedar Chests, by Ralph F. Windoes. Published by Bruce Publishing Co., Milwaukee, 1918. Size 6¾x9½ in.; 70 pages; price, $1.00.

Interest in cedar chests as a school project justifies a book on the subject, and the above book gives helpful information on the design and construction of a variety of chests. Added interest is given by information on the development of the use of cedar and by several illustrations of historic chests.

Emergency War Training for Oxy-Acetylene Welders. Bulletin No. 11. Issued by the Federal Board for Vocational Education, Washington, D. C. Size, 5¾x9⅛ in.; 86 pages.

Part I contains a short history of the development of oxy-acetylene welding and cutting, and illustrates its application to industry and war.

Part II presents the United States Army Course of instruction in this field of industry. The course is outlined on the basis of a three weeks' period, eight hours per day and five and one-half days per week. It is designed to give a complete understanding of the principles involved, the standard methods used, and some practice in meeting the problems of welding and cutting. It is urged, however, that to do this requires proper equipment and skilled teachers.

A bibliography of books and magazine articles on the subject is given.

RECEIVED

Industrial Arts in Secondary Schools in the War Emergency. Secondary School Circular No. 4. Published by the U. S. Bureau of Education, Washington, D. C. This is the report on a series of conferences held in Washington last May in which the Commissioner of Education and two groups of specialists, one representing the sciences and the other the industrial arts, worked out a proposed program for the schools which will help meet the imperative need for engineers, scientists, and skilled mechanics.

Evening Industrial Schools. Bulletin No. 18. Trade and Industrial Series No. 2. Issued by Federal Board for Vocational Education. Describes possibilities of evening industrial school work under provisions of Smith-Hughes Act, and gives suggestive courses which have been prepared and carried out in certain evening schools where effective work has been done. Gives also approved methods of establishing and conducting evening industrial schools for trade workers.

A Bunch of Sheep on Every Farm. Published by International Harvester Co., Harvester Building, Chicago. Urges the raising of sheep, presenting difficulties as well as profitableness. Facts have been gathered from over 5,000 farmers living in various parts of the United States. Price, 15 cents.

Financing the War Through Thrift and *Reconstruction Through Conservation.* Contains papers and addresses prepared by members of the Committee on Thrift Education for the National Council of Education, National Educational Association, July, 1918, meeting.

War Work of the St. Louis Public Schools. Advance print from annual report of superintendent. Contains 161 pages.

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SCHOOL SHOP SUPPLIES

EVERYTHING FOR ELEMENTARY HANDWORK—Also for basketry, weaving, bookbinding and chair caning. Mounting boards, Waldcraft dyes, crayons, burlap, scissors, punch and eye sets. Thomas Charles Co., 2249 Calumet Ave., Chicago.

LUMBER—Maisey & Dion, 2349 to 2423 South Loomis St., Chicago, Illinois, carry in stock a large and diversified stock of MANUAL TRAINING LUMBER. Fifteen years' experience with schools enables us to fill such orders satisfactorily.

TOYS! THERE IS NO END TO THE TOYS which can be made from thin wood by the use of the coping saw. "Coping Saw Work" by Johnson, is a little book which gives just the help needed. It tells about the material, how to make, etc., and outlines a course for the fourth grade. The illustrations show many designs and a large number of completed toys. Price 20 cents. The Manual Arts Press, Peoria, Illinois.

CUSHIONS—You know your cushions will be made right when furnished by the Grand Rapids Cushion Company. Write for estimates on cushions and all kinds of upholstery supplies. Grand Rapids Cushion Company, Grand Rapids, Michigan.

CRAFTWORKERS' TOOLS — For arts and crafts tools, anvils, forms and stakes, send for Porter's catalogue. W. H. Porter Mfg. Co., 11 Tappan Street, Roslindale, Mass.

CANE YOUR OWN FURNITURE—"Seat Weaving" by Perry tells how to cane chairs, how to reseat a chair, how to use cane webbing, how to do rush seating, how to do reed and splint weaving, how to stain, how to finish and refinish, how to prepare raw materials, how to do bleaching. Thoroly practical. Every teacher of furniture making should have this book. Price, $1.00. The Manual Arts Press, Peoria, Illinois.

ALPHABET FOR LETTERING—In the grades that grade pupils can make and high school pupils need not unlearn. Twenty-page booklet, 25 cents. Milton Clauser, Estes Park, Colorado.

"WORKSHOP NOTE-BOOK-WOODWORKING," by George G. Greene. A small-size textbook and notebook combined. Contains important directions about tools and processes, together with suggestions, helps, ideas, questions, etc. Blank pages allow for taking notes and making sketches. Single copies, 19 cents, discount in quantities. The Manual Arts Press, Peoria, Illinois.

"HARD-TO-GET" MATERIALS— Every instructor needs our supplies. Nifty pulls and catches, costumer hooks, tray mouldings and handles, copper chest trimmings, wood lamp shades, art glass, tea wagon wheels, sliding casters, dowels, leather and imitations, all kinds of upholstering materials, etc., etc. We make any style cushion to fit your chair or davenport. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

HAND LOOMS—For use in hospitals, schools and homes. Send stamp for circular and Rug Folio. Faribault Loom Industries, Faribault, Minnesota.

EARN MONEY AT SCHOOL during your spare time representing the MANUAL TRAINING MAGAZINE. No investment required. The work is pleasant and profitable. Write at once for territory and terms. Address Business Manager, The Manual Arts Press, Peoria, Illinois.

MANUAL TRAINING TOYS, by Moore, tells how to make darts, buzzers, tops, guns, whistles, bow and arrows, swords, boxes, telephone, windmills, kites, waterwheels, water motors, pumps, boat, pile driver, kite string reel, cannon, etc. It is full of fun for the boy in his own shop and will add new interest in the school shop. Price $1.00. The Manual Arts Press, Peoria, Illinois.

A Christmas that is deeply joyful and a New Year full to overflowing with Prosperity, we sincerely wish to all our friends the world around.

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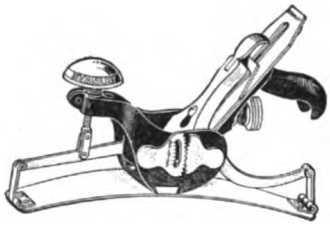
Their use by the Manual Training Schools throughout the United States is constantly increasing.

The new form of adjustment which obviates the necessity of removing the cutter or cap is much appreciated.

We should welcome an opportunity of sending you special literature explaining in details these high grade tools.



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A very useful tool for Manual Training work. They have flexible steel faces which can be accurately adjusted for planing the inside or outside of circles. The cutters are the same and have the same adjustments as the celebrated "Bailey" and "Bed Rock" Planes.

Our catalogue No. 34 will interest you.

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FIELD NOTES

(*Continued from p. X.*)

MINNESOTA NEWS

W. W. Mitchell, supervisor of boys' work, Northern Division of The American Red Cross, reports that his district is making 264,000 splints, 2,000 bedside tables and 500 cooking utensil chests for the Army. The work is apportioned among the schools according to the size of the school and their eagerness to do the work. The work was supposed to have been completed by November 15, but on account of the influenza epidemic some little time will have to be allowed in addition. Labor is furnished by the schools, the material however is paid for out of the Chapter's school fund. Should this be insufficient the balance will be taken care of from the War fund.

Dunwoody Institute continues to be a busy war training center. At the present time army barracks are being constructed by the students on the school grounds. All buildings are according to the army specifications for Northern cantonments. There are five buildings 220 ft. by 30 ft. two stories high; one building 220 ft. by 48 ft. two stories; and three buildings 80 ft. by 20 ft. Dunwoody's quota has been increased from 750 to 1,200 army men. The largest building has a mess hall which will seat all at one time. The recreation center is also in this building.

One of the 220 ft. by 30 ft. buildings accommodates the Guard and the Medical and Quartermasters departments. The upper floor is used as barracks, and the other buildings of the group are barracks. They are heated by steam from the Dunwoody heating plant. The Naval students are putting up a Hangar 70 ft. by 120 ft. for the use of the Student Flight officers. It has 66 ft. doors at one end and a concrete base.

Miss Young, the Dunwoody chief clerk, has gone to France. W. W. Grant has gone with the Federal Board in charge of rehabilitation work. The army barracks are being designed by Dunwoody staff men. Mr. Nelson, head of the building construction department is foreman, while C. J. Brown is architect and engineer. All carpenter work, electric wiring and sheet metal work is being done by Dunwoody classes. The plumbing and heating are contracted for, as the school does not have classes in these subjects.

(*Continued on p. XV.*)

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FIELD NOTES

(*Continued from p. XIV.*)

The printing department is now known as the department of printing and publications. Lesson material which formerly was gotten out by mimmeograph is now published in book form or in printed lesson sheets.

The work of the re-education of disabled soldiers for Minnesota, North Dakota and South Dakota, is being organized in Minneapolis. Offices have been opened in the Metropolitan Bank Building. Harry W. Jones, a prominent architect, is district vocational officer. C. A. Zuppann, formerly director of technical courses at Central high, is in charge of the educational work as supervisor of advisement and training. Mr. Zuppann has been working out of the Washington office for some time and has largely organized the work in advance of the establishing of the office.

Governor J. A. A. Burnquist has appointed a state board on rehabilitation of industrial cripples, which has E. M. Phillips, state high school inspector, as one of its members.

The War department has authorized Dean Allen, of the College of Engineering, University of Minnesota, to organize an auto mechanic department of the vocational section of the S. A. T. C. Men who have graduated from the eighth grade will be eligible and will be inducted by their draft boards. The number is limited to 300.

The Minneapolis schools will probably enter upon an all-year-around school plan in 1919. There will be four quarters separated by one week of vacation. Many of the teachers are enthusiastically in favor of the plan. The board of education has just about ratified the program as presented by Superintendent Jackson.

—J. L. Pemberton.

NOTES FROM THE NORTHWEST

The meeting of the Washington Educational Association, which was to have been held October 24, 25, and 26 in Seattle, was postponed because of the Spanish influenza. No date has been set, but the Manual Arts section will meet early in the coming year.

A representative gathering from all parts of the state was present at a Smith-Hughes conference called by state director C. R. Frasier, and

(*Continued on p. XVI.*)

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BIT BRACE No. 732

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FIELD NOTES

(*Continued from p. XV.*)

held in Seattle November 6 and 7. The program follows:

Five minute talks on—

(1) Recruiting Classes from Outside the School.
(2) Should Boys be Compensated for Work Having Commercial Value?
(3) My Shop Projects.
(4) My Understanding of the Terms, 'Unit Trade Courses' and 'Short Unit Course'.
(5) What I Understand by 'Useful and Productive Basis'.

Federal Agent Ben W. Johnson gave a short talk on "Lessons From Other States." In the afternoon Professor George H. Jenson spoke on "The Course of Study." Following this talk opportunity was given for discussion from the floor.

After a cafeteria supper B. F. Affleck, of the Emergency Fleet Corporation, formerly of the Newton Vocational School, talked on "The Jumping Off Place." Edward Krussell, associate in vocational education, University of Washington, spoke on "The Jumping In Place."

The next day's program consisted of short talks on the following subjects:

"The Attitude of the State Board for Vocational Education," by its President, Mrs. Josephine Corliss Preston; "Devices for Creating a Craftsmanlike Attitude on the Part of Pupils," Harold Howes, Seattle; "Recruiting Vocational Classes," Chas. T. Miller, Tacoma; "Related Work in Mathematics," C. E. Russum, Spokane; "The Related Work in Drawing," J. M. Hitchcock, Bellingham; "English and Citizenship," Miss Mullen, Spokane; "Related Work in Science," Professor F. O. Kreager, Pullman; "The Ellensburg Plan," Superintendent McCullough, Verne Hall and Mr. Frazier; "Text and Reference Books," Mr. Vincent and Mr. Krussell; Question Box, Mr. Johnson.

NEWS FROM EL PASO, TEXAS

El Paso, like most other cities, has had great difficulty in securing teachers of industrial arts. At the opening of the schools this year we were short six teachers. After futile attempts at obtaining teachers thru teachers' agencies and schools, we came to a realization that we would

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FIELD NOTES

(*Continued from p. XVI.*)

have to look to some other source for our teachers or close up many of our shops. We finally decided to try to secure from the trades men who had sufficient education and were willing to teach. In this we were highly successful, filling five of the vacancies in time for the opening of school so that the work was started off without very much delay. We are now convinced that we made a good move in this plan for these men have entered into their new work with such interest and enthusiasm that their success as teachers is assured. In the sixth vacancy we placed one of our teachers of primary handwork.

The new instructors in the department this year, and the work they are doing is as follows: William Sachs, instructor in machine shop practice, twenty-four years' experience in machinists' trades; Lewis Osborn, instructor in mill work, cabinet making and carpentry, ten years' experience in woodworking trades; Harry Blumenthal, instructor of printing, twenty years' experience in the printing trades; Hervey Logan, instructor in prevocational work, including forge practice, sheet metal work and electrical construction, graduate of an electrical school and three years' experience in the trade; Lloyd Allen, instructor in woodworking, twenty-eight years' experience in building trades; Miss Helen Wells, instructor in woodworking in the elementary schools, graduate from a training school for manual training teachers.

VOCATIONAL COURSES UNDER SMITH-HUGHES LAW

Application has been filed with the State Board for Federal aid under the Smith-Hughes law in the following courses: In the day high school, vocational mill, cabinet making and carpentry, one class; vocational machine shop practice, two classes; vocational architectural drawing, one class. In the night schools, vocational machine shop and vocational machine drafting. These classes have been organized and are operating at the present time. The academic courses in the high school are being reorganized to meet the needs of these new courses.

Our classes in radio and buzzar work are being continued. This course has been greatly extended in its scope so that the men are now

(*Continued on p. XVIII.*)

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WARRANTED UNEQUALLED
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"I Tell You It's A Great Saw"

FIELD NOTES

(*Continued from p. XVII.*)

given training in taking and receiving messages at the key; receiving messages by blinker and wigwag; and also in the management and operation of wireless apparatus. The Bailey school, where these classes are held, has been designated by the war department as a wireless station under government supervision, and the War Department has turned over to the instructor four complete sets of wireless apparatus to be used for instruction purposes. An antenna has been placed on the building and students are given practice in sending and receiving messages from the stations in the various army camps in the immediate district. Since this class was organized in February over fifty men have been inducted into the service, graded as proficient enough to fill the needs at the time they were called.

WAR WORK

War work problems are being substituted for regular outlined courses in the elementary school manual-training classes. All manual training classes were started out this year on toy making for the Red Cross. It is the plan of the local Red Cross to hold a bazaar from time to time throughout the year, and the manual training classes will supply toys to be sold. The first sale of this kind was held the first week of October, in connection with the Festival of the Allies held by the Red Cross. About four hundred toys were made by the manual training boys for this first sale, and the officers of the local Red Cross were well pleased with the results of this sale. Plans are also under way for the making of various articles for the hospitals and convalescent homes for soldiers returning from service in France. Our work is halted at the present time on account of the closing of schools to assist in stamping out the epidemic that has spread over the country, but we hope that this will not be for long, and will renew our efforts in war work with even greater energy when schools reopen.

The high school class in mill and cabinet work is now in the midst of getting out an order for furniture to be placed in the Gift House being built by the local Red Cross. Our present order for this furniture calls for seven tea tables, thirty chairs for the same, two desks and chairs, one

(*Continued on p. XIX.*)

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FIELD NOTES

(*Continued from p. XVIII.*)

reading table and five upholstered chairs for the reading room. When these are completed the class expects to continue making show cases and other furniture for this same building. The call for this work has furnished the very thing needed for the beginning of our class in vocational training, as the boys have entered into this work with fine interest and the work furnishes an ideal foundation for instruction in mill and cabinet construction on a productive and commercial basis.

NEW EQUIPMENT

A new machine shop has been added to the high school this year, the equipment costing about six thousand five hundred dollars. This shop was installed to meet the needs for vocational training that are so urgent now and which will be even more needed in the future. In the pre-vocational department, considerable new equipment is being added for electrical work. The original idea of this department was to furnish only very short unit courses, but the demand for experienced workers along mechanical lines, and more especially electrical, has brought about a demand for a more extensive course in electrical work, for which the new equipment is provided.

W. A. BURK,
Supervisor of Industrial Education.

CHICAGO EXAMINATIONS

The Chicago board of education announces an examination on December 27 and 28, 1918, for teachers of manual training in the city schools. The major subjects cover mechanical drawing, foundry, woodworking, electrical construction, sheet metal work, printing, machine shop, and blacksmithing. Candidates for Limited Certificates do not require a university degree. They must present in advance, however, credentials shrowing:

(a) A diploma of graduation from a four-year high school course of the grade of the Chicago public schools.

(b) At least three years of special training in the major subject (two years of a teacher's training school course and one year of teaching major subject will be accepted);

Or instead of (a) and (b)

(*Continued on p. XX.*)

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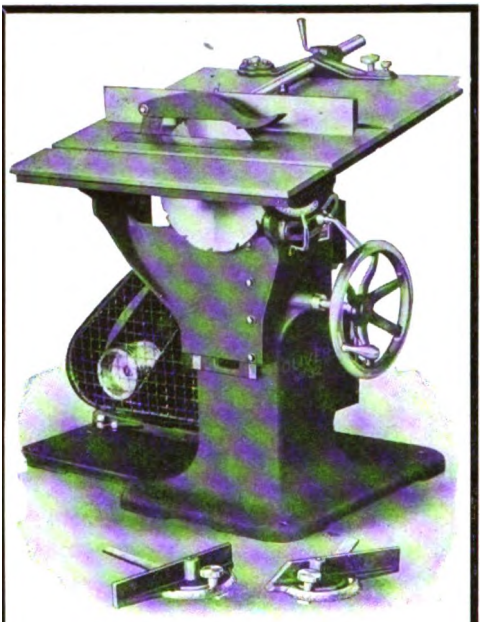

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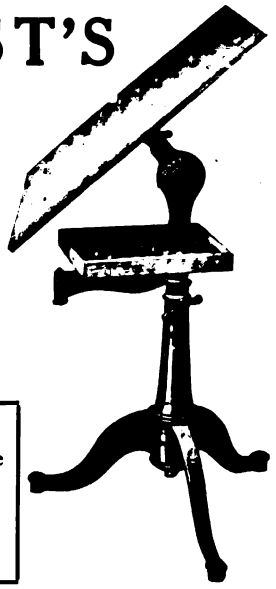

Also we can recommend the **Polytechnic Illustrator Victor Stands**

THE FREDERICK POST CO.

Manufacturers - Chicago

San Francisco Cal. **Portland Ore.**

FIELD NOTES

(*Continued from p. XIX.*)

(c) Six years of special training (trade experience) in manual training subjects. This section does not apply to mechanical drawing.

The salaries range from $1,200 to $2,575. Annual increase averages $86.

Candidates for General Certificates must present in advance credentials showing:

(a) Graduation from an accredited college.

(b) Two years of successful experience in graded schools, and two years of practical experience in the major subject;

or

(a) Graduation from an accredited college.

(b) Two years of successful experience in teaching the major subject.

Salary from $1,200 to $3,000. Annual increase averages $112.50. More detailed information can be secured by addressing Chicago Board of Education, Tribune Building.

PRELIMINARY ANNOUNCEMENT OF PROGRAM

The program of the fifth annual convention of the Vocational Education Association of the Middle West, which is to be held in Chicago on January 16, 17 and 18, 1919, promises to be one of the best which this association has ever held. Meetings in the past have established a reputation for dealing with timely and pertinent questions confronting the field of vocational education in a vigorous and forceful manner. The valuable discussions which were held last year, with the effects of the war as the dominant note, will long be remembered by those in attendance. Previous meetings, before the passage of the Smith-Hughes act, contributed a great deal towards clarifying methods of procedure in the Middle West. This year, with the dawn of peace, everyone connected with the administration and teaching of vocational work in the schools will be sure of receiving a great deal of profit and stimulation for the serious work which lies immediately ahead.

The program committee announces the following speakers who will appear on the program: David Snedden, Professor of Vocational Education, Columbia University, New York City;

(*Continued on p. XXI*)

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POSITIONS FOR TEACHERS OF INDUSTRIAL ARTS OUR SPECIALTY
NICHOLAS BLDG. ST. LOUIS

FIELD NOTES

(*Continued from p. XX.*)

Florence Marshall, Principal Manhattan Trade School for Girls, New York City; Julia Lathrop, Chief, Children's Bureau, U. S. Department of Labor, Washington, D. C.; E. A. Wreidt, Supervisor of Industrial Education, Springfield, Ill.; Frank M. Leavitt, Associate Superintendent of Schools, Pittsburgh, Pa.; Abraham Flexner, Secretary, General Education Board, New York City; Charles A. Prosser, Director, Federal Board for Vocational Education, Washington, D. C.; Arthur E. Holder, Member, Federal Board for Vocational Education, Washington, D. C.; Philip B. Woodworth, District Educational Director, Committee on Education and Special Training, Lewis Institute, Chicago; Hugh Frayne, Chairman Labor Division, War Industries Board, Washington, D. C.; Agnes Nestor, First Vice-president, International Glove Makers Union of America; E. E. MacNary, Superintendent of Training, U. S. Shipping Board, Philadelphia; Louis Post, Assistant Secretary of Labor, Washington, D. C.

E. G. Anderson, manual training instructor in the Seattle public schools and for the past two years the Northwestern correspondent for this Magazine, has accepted a position at the State Normal School, Ellensburg, Washington.

George H. Jensen, director of the teacher-training course in trades and industry at the University of Washington, has been appointed district representative of education and training for the Industrial Relations Group of the Emergency Fleet Corporation, giving half of his time to this work and half to the University.

Leon L. Winslow, of the Bowling Green, Ohio, State Normal College, has been appointed specialist in drawing and industrial training in the division of agricultural and industrial education of the New York State Department. Raymond V. Long, of the Farmville, Virginia, Normal School, succeeds Mr. Winslow at Bowling Green.

Tools for Sheet Metal Work

Manual training, vocational and technical schools are invited to communicate with us regarding equipment of shops for sheet metal work, the importance of which is constantly increasing, owing to the popularity of sheet metal as a substitute for other materials.

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Manufacturers of
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Useful Books for the Teacher's Library

☐ **HANDWORK IN WOOD**—Noyes. The best reference book available for teachers of woodworking. A comprehensive and scholarly treatise, covering logging, sawmilling, seasoning and measuring, hand tools, wood fastenings, equipment and care of the shop, the common joints, types of wood structures, principles of joinery, and wood finishing. **$2.25.**

☐ **DESIGN AND CONSTRUCTION IN WOOD**—Noyes. Gives to beginners practice in designing simple projects in wood and an opportunity to acquire skill in handling tools. The book illustrates a series of projects and gives suggestions for other similar projects together with information regarding tools and processes for making. A pleasing volume abundantly and beautifully illustrated. **$1.50**

☐ **WOOD AND FOREST**—Noyes. Especially adapted as a reference book for teachers of woodworking. Treats of wood, distribution of American forests, life of the forest, enemies of the forest, destruction, conservation and uses of the forest, with a key to the common woods by Filibert Roth. Describes 67 principal species of wood with maps of the habitat, leaf drawings, life size photographs and microphotographs of sections. Profusely illustrated. **$3.00.**

☐ **CORRELATED COURSES IN WOODWORK AND MECHANICAL DRAWING**—Griffith. This book meets the everyday need of the teacher of woodworking and mechanical drawing for reliable information concerning organization of courses, subject matter, and methods of teaching. It covers classification and arrangement of tool operations, stock bills, cost of material, records, shop conduct, the lesson, maintenance, equipment and lesson outlines for grammar and high schools. The most complete and thoro treatment of the subject of teaching woodworking ever published. **$2.00.**

☐ **THE MANUAL ARTS**—Bennett. A treatise on the selection and organization of subject matter in the manual arts and on the methods of teaching. It states what manual arts should be taught in the schools, their place as concerns general and vocational education, principles underlying the making of courses of instruction and methods of teaching and shows the place of the factory system in industrial schools, etc. Should be read and studied by every teacher or prospective teacher of the manual arts. **$1.00.**

☐ **MANUAL ARTS FOR VOCATIONAL ENDS**—Crawshaw. A valuable addition to the present day literature on the problem of industrial education. It is a strong and convincing plea for the development of the present school machinery to serve the ends of vocational education. It treats the problem in a practical way giving concrete working helps and is a source of inspiration to manual arts teachers. **85 cents.**

☐ **FURNITURE DESIGN FOR SCHOOLS AND SHOPS**—Crawshaw. A manual on furniture design containing a collection of plates showing perspective drawings of typical designs, representing particular types of furniture. Each perspective is accompanied by suggestions for rearrangement and the modeling of parts. The text discusses and illustrates principles of design as applied to furniture. A practical and helpful book that should be in the hands of every teacher of cabinet making and designing. **$1.25.**

☐ **SEAT WEAVING**—Perry. A handbook for teacher or student. Tells how to cane chairs, how to use cane webbing, how to do rush seating, how to do reed and splint weaving, how to make seats of reeds and splints, how to prepare raw materials, how to stain, finish and refinish. etc. Also treats of the use of cane and other seating materials as a decorative element in furniture construction. Well illustrated, practical and authoritative. **$1.00.**

☐ **ART METALWORK**—Payne. Treats of the various materials and their production, ores, alloys, commercial forms, etc.; of tools and equipments suitable for the work, the inexpensive equipment of the practical craftsman, and of the correlation of art metalwork with design and other school subjects. It describes in detail all the processes involved in making articles ranging from a watch fob to a silver loving-cup. It is abundantly and beautifully illustrated. The standard book on the subject. **$2.00.**

Check the square opposite the books you need for your library, fill in the blanks below, clip this page and mail to **The Manual Arts Press, Peoria, Ill.** The books will be forwarded at once. Satisfaction guaranteed.

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TRADE NOTES

A copy of Catalog No. 56 issued by the Niagara Machine & Tool Works, Niagara Falls, New York, has just been received. This firm is well-known as manufacturers of tools and machines for sheet metal work. Their catalog shows also that their line includes a large variety, ranging from the ordinary hand tools to big presses and shears. This enables them to offer such equipment as is best suited to the individual case.

Work in tinsmithing is being rapidly introduced into the school shops, and teachers needing tools and equipment for this work should see this latest "Niagara" catalog.

One of the recent projects undertaken in the school shops is the making of a phonograph. At one time such a project would have been impossible, but today when all the parts together with the material for the case and the necessary working drawings, can be purchased, it at once falls within the range of the average student's ability. Teachers or students interested in this problem can secure the materials from the Choraleon Company, 810 Monger Bldg., Elkhart, Indiana.

If any of the readers of this magazine are not familiar with the spring bolt top construction of the Kewaunee line of shop equipment, they should send for the Kewaunee Book. Address, Kewaunee Manufacturing Company, Kewaunee, Wis.

As indicated by the name, Disston's D 17 Double Duty Handsaw has been made to answer the need for a saw that will crosscut or rip with ease and rapidity. When the saw is used for cutting, the rip-teeth act as "cleaners," that is, clearing out the kerf. In ripping, there is double action, the crosscut teeth making a scoring cut on each side of the kerf, which enables the rip-teeth to cut clean with greater ease and rapidity, not only in ripping but in cutting on an angle or diagonally across the grain, which is its specialty.

The Oliver Machinery Company, Grand Rapids, have issued a circular which very fully describes their No. 15-R Band Re-Saw, the special feature of which is its adaptability. With this saw one can plane down a 1-inch or 2-inch board to ⅜, ½ or ⅝ inch thickness without loss. In these days of high prices, such a saving is of great importance, especially when expensive lumber is being used.

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VENUS for smoothness, exact grading, correct temper of graphite, ease of marking and perfection.

17 black degrees
6B softest to 9H hardest
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Send 14c in stamps for 3 trial samples. After you find how perfect they are, buy **VENUS'** regularly at any dealer.

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219 Fifth Ave., Dept. A, New York
and Clapton, London, Eng.

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HAND SCREWS
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Ask for our 16-page Catalog No. 152 showing a great variety of Hand Screws and Clamps for every conceivable purpose, of wood, iron and steel—adjustable, quick action, etc.

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When Distress Calls the Red Cross Answers "HERE!"

Now the Red Cross calls! The annual Christmas Roll Call of members will echo throughout the land the week of December 16th to 23rd.

All You Need is a Heart and a Dollar—

These entitle you to membership for one year. When you wear your button, signifying that you are a member, you will not be asked to join again this year—it means that you have answered the Roll Call.

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Our soldiers and sailors look to the Red Cross for comforts. They have never been disappointed.

The Red Cross looks to you for the moral support of your membership. Answer "HERE!" when the Roll is called.

JOIN THE RED CROSS

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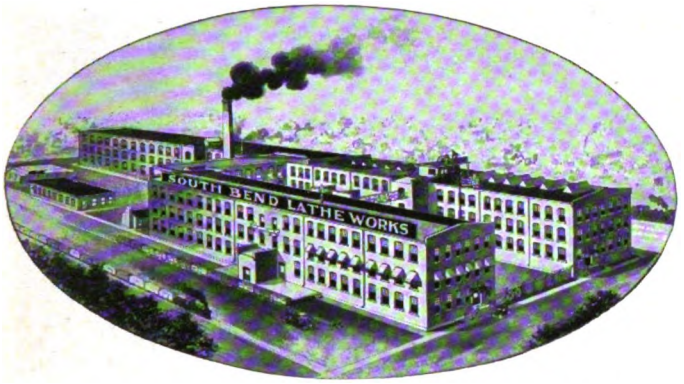

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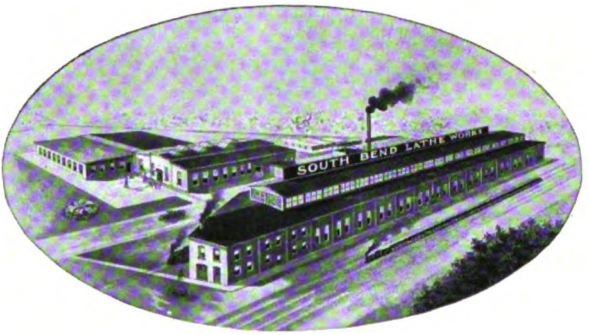
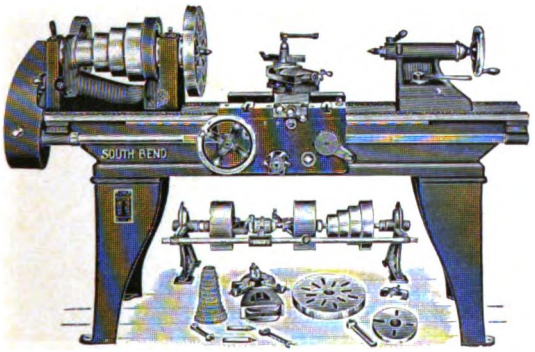


FELLOW ST. PLANT



13 in. x 5 ft.	Lathe,	$299.00
15 in. x 6 ft.	"	387.00
16 in. x 6 ft.	"	475.00
18 in. x 8 ft.	"	623.00
21 in. x 10 ft.	"	925.00
24 in. x 12 ft.	"	1340.00

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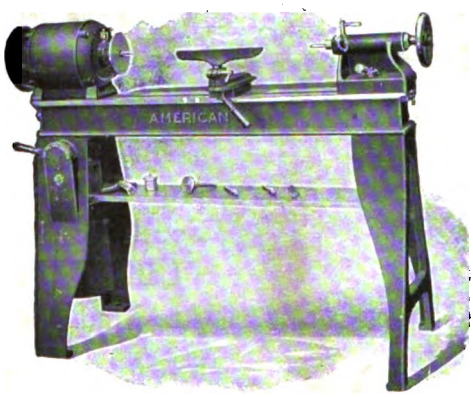
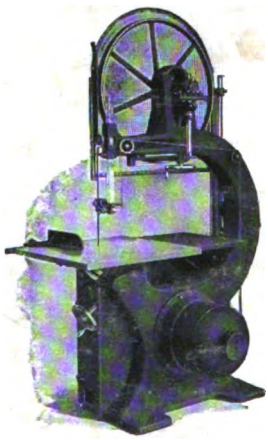
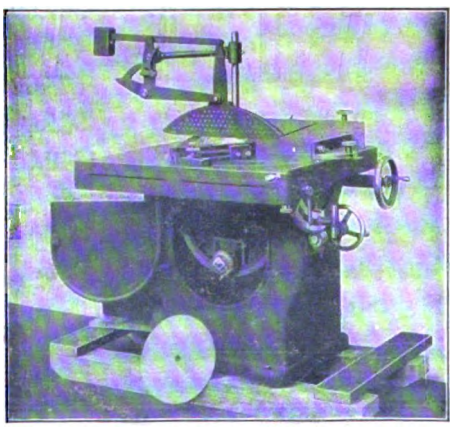


American 12-inch Speed Lathe
(A. C. Headblock)



American 30-inch Band Saw
(Direct Attached Motor)



American No. 20 Saw Bench
(Patent Automatic Guard)

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It Is Profitable

A FEW years ago the Board of Education of Rochester, N. Y., organized an elementary Vocational School. **"American"** Woodworking Machinery costing $850 was installed.

In 1912 a group of pupils turned out on those machines **School** furniture worth $2900.

Since 1912 a tool has been added from time to time as the need for it arose until now there is in the Rochester Public Schools a complete equipment of **"American"** Woodworking Machines for Cabinet Making.

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Pupils from the sixth, seventh and eighth grades operate the machines **safely** and efficiently because the cutting mechanism is properly guarded.

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Vol. XX JANUARY, 1919 No. 5

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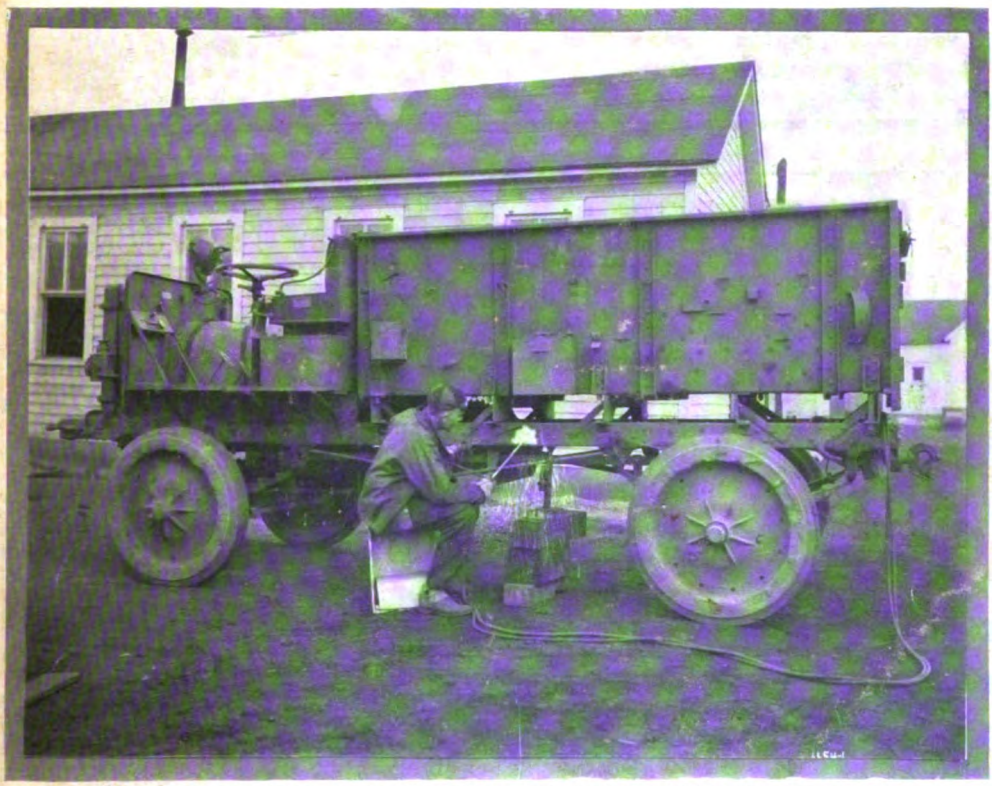

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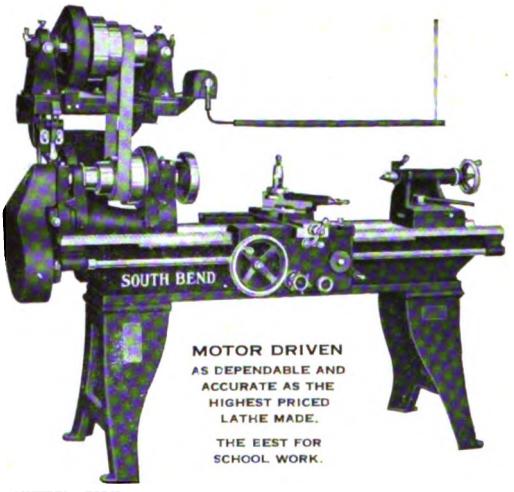

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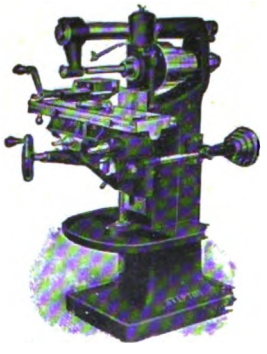

Time and Money is Wasted

very often by the purchase of tools not adapted to the work. You would not think of putting a 32 in. lathe in your school room on account of the high first cost, and it is not adapted to your work. You can put two 16 in. lathes or more in the same space and you can buy two or three machines for the cost of the larger one. Apply that same principle to your milling machines and buy **STEPTOE** small power feed or hand millers, a machine especially adapted to school room work.

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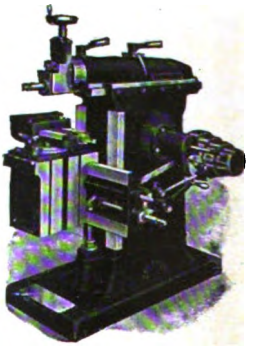

should be your first consideration in equipping your machine shop. Large pieces can be planed on a planer, but small parts should be put on a shaper. The simplicity of design of **STEPTOE SHAPERS** means ease of operation and a consequent saving in repair bills.

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are Quality from "stem to stern." The finest steel and careful workmanship have standardized them as reliable tools for up-to-date shop equipment.

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FIELD NOTES

AROUND NEW YORK

STUDENTS in the high schools of New York City recently competed in a professional design toy contest. Dr. James P. Haney, the director of art in New York City schools, announced in October that the School Art League, acting in cooperation with members of the toy trade, would offer prizes for toys designed by high school pupils. The toys made were cut in silhouette from wood and painted in gay colors. The contest opened November 1 and designs were handed in December 1. Each school organized its own group of contestants. The Art League is to offer a prize for the best work done in each school. During the month of December, after all local competitions are concluded, the designs made in the several schools will be collected and judged by a professional jury from the trade.

Carrying out the established policy of trade unionists in the United States, the New York State Federation of Labor recently at its fifty-fifth annual convention, adopted a comprehensive programme of education. The programme was submitted as the report of the committee on education of the Federation, of which Peter J. Brady was chairman and Fred F. Moran, secretary. There were thirty-eight separate proposals in all. Some of those of more or less interest to readers of the Manual Training Magazine were as follows:

(1) A state law establishing compulsory continuation schools for children who leave school up to the age of eighteen years, of not less than eight hours a week, study hours to be between 8 A. M. and 5 P. M., Saturdays excepted.

(2) A state law establishing a free school textbook system for all school children of the state, including elementary and high schools.

(3) Legislation to compel local authorities to provide dental, medical and surgical treatment for the care of all school children.

(4) Compulsory establishment of kindergarten classes in connection with every school and under control of board of education.

(5) That there be established in connection with every school a system of furnishing school lunches at a nominal cost for the purpose of demonstrating food values, and thereby assuring us, thru educational processes, more healthy men and women in the future.

(6) A state law establishing complete compulsory systems of modern physical education under the direction of competent instructors.

(7) The establishment of training schools for trade and vocational teachers with full pay during their period of training, and that we urge members of labor unions who desire to become teachers to apply for admission to these classes.

(8) A state law to the effect that the minimum annual salary for teachers shall not be less than $1200.

(9) Better enforcement by the state and local authorities of compulsory educational laws and the universal establishment of a minimum school-leaving age of sixteen years.

(10) That we insist upon the State Educational Department, in conjunction with the Industrial Commission, conducting a survey of all industries of the state before state or federal aid is extended to any school district, village or city in the state, and that we oppose the extension or establishment of industrial or vocational training in any schools of the state until such a time as an investigation is made, and the requirements and status of each trade from an educational viewpoint is ascertained. Local surveys to be made by state authorities upon request of local communities from time to time.

(11) That we approve of the vocational rehabilitation of the crippled soldiers in service as now being carried on by the Federal Board for Vocational Education and that this same machinery be used to help restore the victims of industrial accidents to economic independence, and that we oppose all private training of this kind unless done with the approval of the Federal Board for Vocational Education.

(12) Acquisition of a fair knowledge of the English language by continuous shop and school instruction supervised by state educational authorities be required of all employed foreign-language aliens as a condition of continued employment.

(13) We recommend the question of the establishment of all-year schools be given careful consideration by the state board of education and all local communities.

(14) We recommend that all local unions appoint committees on education and that these committees take the initiative and offer their

(Continued on p. VI.)

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training and experience to the local authorities and show a willingness to cooperate with all others interested in educational problems and for the advancement and improvement of education generally.

The Architectural League of New York City recently adopted measures to prevent Germany recovering the practical monopoly of the trade in all kinds of artists' materials which she enjoyed before the war. It was brought out during the meeting that the Germans had been using great numbers of children and other non-combatants for the last four years in the manufacture of pencils, papers, mechanical drawing instruments, canvases, colors, and in fact all the materials used in studios and designing establishments. She has arranged to dump the vast quantities of goods accumulated on the Americans and drive out of business the local manufacturers who have developed the business here.

It seems as if the situation with regard to artists' materials prior to 1914 was very much like that which existed in case of the dyestuffs. Owing to the United States being thrown on its own resources, it has solved the problems involved in the latter case so that at the present moment, in addition to meeting the demands of the local markets, this country is sending dyes to Burmah, Siam and other places in the far east, over which the Germans used to have full control.

There are many other branches of industry related more or less directly to the fine and applied arts in which Germany has had an advantage. When the war came, American manufacturers who had been in the habit of depending on designs furnished from the Teutonic workshops, had to fall back on their own craftsmen who have received their training and vocational courses in this country. A great many thoughtful and progressive manufacturers and educators are determined not to lose the gains made in the last four years. With this end in view serious efforts should be made to improve the quality of designing in our schools. Prizes should be offered in art departments of the public schools to develop a taste for toy making among children for the purpose of enlarging the industry and make the market of the United States independent of the manufacturers. It has been proposed that the services of a number of the best comic artists be obtained in order that the imaginative quality of the playthings may be improved. It has been found in Great Britain and France that toy making is a form of bread winning that is particularly available in the case of disabled soldiers.

—W. H. Dooley.

IN AND ABOUT BOSTON

THE first meeting of the Boston Manual Training Club was held November 23, at the Boston Architectural Club. It was a luncheon meeting such as have proved to be very popular with the Club during the past two years. The business conducted included reading of reports of committees, the installation of officers for the coming year, a vote of appreciation for the fine service rendered by Edward C. Emerson, the retiring president, and a vote of congratulation to John C. Brodhead upon his election to the position of assistant superintendent of Boston schools.

Following the business part of the meeting, M. Norcross Stratton, agent in charge of teacher training, Massachusetts State Board of Education, gave an illustrated talk on training classes for vocational teachers as conducted in Massachusetts under State and Smith-Hughes Bill funds. Mr. Stratton referred briefly to the plan tried when the need of teachers became so urgent that vocational teachers were made out of men already in school work. This was not found feasible, so the present plan of taking men from the industries and giving them courses on methods of teaching was adopted. Mr. Stratton gave credit to Charles R. Allen, formerly in charge of this work in Massachusetts, who, as is well known, is responsible for the foundation of the present course of study. The classes are open to any man who shows "that he possesses all the qualifications for approval as a teacher in a State-aided school, except the successful pursuit of a training course under one of the following classifications: (1) Trade teacher; (2) Technical teacher; (3) Non-vocational teacher." In Massachusetts, all instructors in evening trade schools are obliged to take the course.

In outline, the work consists of (1) Trade Analysis, (2) Methods of teaching, (3) Analysis of commercial jobs, (4) Instructional order of

(*Continued on p. VIII.*)

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The Finish Is Important!

SURELY this is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

JOHNSON'S WOOD DYE

Is just the preparation for staining models. It is very easy to use—goes on like oil without a lap or a streak. It is made in 14 attractive shades—which may be easily lightened and darkened. Over the dye apply a coat of

JOHNSON'S PREPARED WAX

This gives a soft, artistic finish of great beauty and durability. It is clean and easy to use and economical—no tools or brushes required—all you need is a cheesecloth rag.

Johnson's Prepared Wax is now made in Liquid form as well as Paste. The Liquid Wax polishes instantly with but very little rubbing.

Write for our booklet on wood finishing. We are glad to furnish it free to Manual Training teachers and pupils.

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jobs in a trade, (5) Practice teaching. The first four divisions occupy twenty weeks of two two-hour sessions a week. In addition, twenty hours of practice teaching are required, except where equivalent work is accepted. Mr. Stratton had slides illustrating the forms which are made out by the students taking the course. These forms greatly help in confining the student to definite problems in making the principles of good teaching clear. They also serve to impress the student with the content of his trade and the value of lesson planning.

At present, there are 208 men enrolled in Massachusetts, distributed over five districts, the centers of which are Boston, Lowell, New Bedford, Worcester, and Springfield. Out of 75 men who were trained during last year, 55 have been placed in teaching positions chiefly in Boston and Springfield. A feature of the Massachusetts plan is follow-up work and training on the job. Vocational instructors are visited by state representatives, who offer such suggestions as will help in raising the standards of those already engaged in teaching. At first, there was a suggestion of embarrassment on the part of the men visited, but this has given way to a professional spirit among the instructors desirous of improving their methods.

The application of the principles of teaching is to be found in numerous industrial activities. We have heard much of the way in which they have been adapted to shipbuilding. In manufacturing plants, vestibule schools are becoming more and more common, and the state training courses for foremen who teach in such schools, is rendering an educational service beyond that of training vocational teachers.

The Boston School of Occupational Therapy has graduated its third group of Reconstruction Aides in Military Hospitals and will start with a fourth group January 6. Of those graduated, many are in service both in hospitals in this country and in those abroad. Since the school opened last spring, and particularly since the close of the war, the possibility of the school becoming of permanent service is being considered. Bedside occupations are of value to the industrial cripple as well as to the crippled soldier, and it would seem that provision should be made for treatment of the great army of industrial workers who thru illness or accident need hospital care. One of the likely results of the war is a changed attitude of society toward cripples in general, and it is probable that greater effort will be made to restore them to usefulness and independence. The bedside occupations as given to the soldier could be applied to hospital cases in a much more general way than ever before. In training aides for military service, schools for occupational therapy may be entering upon a work of more than temporary value.

The present course of the Boston school consists of the following: Bookbinding, 28 hours; Wood carving, 46 hours; Block printing, 52 hours; Woodwork (toys), 58½ hours; Basketry, 37 hours; Design, 35 hours; Cord work, 11 hours; Weaving, 51 hours; Leather work, 16 hours; Modeling, 27½ hours; Raffia work, 6 hours; Brush making, 3 hours; Mop making, 3 hours; Hooked Rugs, 6 hours; Crocheted Rugs, 6 hours; Bead work, 4 hours; Rake Knitting, 5 hours; Colonial Mats, 3 hours; Gesso work, 6 hours.

Wentworth Institute

During the past eight months, Wentworth Institute, Boston, has been conducting vocational courses for drafted men in accordance with the requirements of the Committee on Education and Special Training. New England constitutes one of the ten divisions of the country, and in this locality Wentworth Institute was the first school to establish courses acceptable to the Government. Besides the work of the S. A. T. C., the Institute has given highly specialized training to draftees. These men were sent to the school from the local draft boards in such numbers as could be accommodated. Upon entering, each candidate was interviewed regarding his previous work and training, and was then assigned to the course in which he would have the best chance to succeed. Many men of no special mechanical training but of mental ability were found to have the makings of good mechanics. The courses offered trained men were for auto mechanics, gunsmiths, gas engine machinists, concrete workers, radio operators, radio electricians, surveyors, topographical draftsmen, pipe fitters, forgers, aeroplane mechanics. The courses were of twelve weeks' duration, six

(*Continued on p. X.*)

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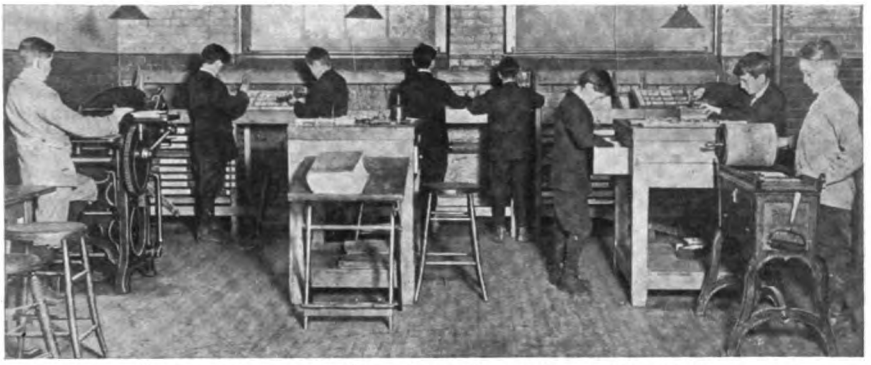

PRINTING DEPARTMENT, SALEM STATE NORMAL SCHOOL, SALEM, MASS.

Printing as an *After-War* School Subject

"The purifying flame which is sweeping the dross from the world will not stop short of our schools, curricula, text-books, and, indeed, the entire machinery of instruction. These will be scrutinized as never before and challenged to show why they should be given place in the new order of things which will emerge." So writes DR. FRANK F. BUNKER, *City School Specialist*, Los Angeles, Cal.

Schools containing printing outfits should welcome that scrutiny and accept the challenge with confidence.

Printers' ink, in the form of advertising and promotion literature, will prove to be the tonic that will rejuvenate those industries that have lain dormant during the war.

Our schools must turn from the teaching of war activities to those subjects that have to do with the building up of trade and commerce. Of these subjects printing stands preëminent, and, on account of the tremendous influence and power it will exert, should be included in every school desiring to install vocational or manual training.

Printing stands unexcelled as a practical device for teaching the elements of English composition, spelling, capitalization, indentation, paragraphing, spacing, and utilizes all the principles of good design.

Printing should be taught in every type of school. This department would be pleased to furnish any information possible regarding the introduction of a course in Printing in your school. *Our full line of literature is yours for the asking.*

EDUCATION DEPARTMENT

American Type Founders Company

300 Communipaw Avenue, Jersey City, N. J.

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hours a day for shopwork and from two to three hours a day for military drill. Upon completion of the courses, men were sent to camps where their qualification cards were filed. Upon demands from overseas, the men were distributed according to the classifications stated in the orders.

Not all technical schools have been able to participate in the vocational training for soldiers owing to the government requirements including, as they did, the housing and feeding as well as training. Other schools in New England where vocational training was given are the Franklin Union, Tufts College, University of Maine, Rhode Island State College, New Hampshire State College, Brown University, University of Vermont, Springfield Technical High School, and the Newton Technical High School. At the time of writing, all of this intensive training for military service is being brought to a close, and the normal activities of the various institutions will soon be resumed.

At Wentworth Institute there are about 200 civilian students who have been under instruction, as in normal years. In addition, 100 members of the Student Army Training Corps have enrolled for the completion of work already begun.

The results of both the technical and military training in these schools have been very gratifying. It has been demonstrated that the work has been done better and with less expense than would have been possible under the government. Our technical schools have proven their efficiency in meeting the needs for emergency training. Now that the demands of war need no longer be considered, the question arises as to how the intensive courses given to soldiers will influence the educational problems of peace times. We have no doubt learned that much can be accomplished by short courses where the aim is to train for a specific line of industrial work. The pressure necessary to war preparation will very likely react on our future vocational work, and tend to speed up our instruction, particularly in evening courses of an intensive and special character.

—GEORGE M. MORRIS.

MINNESOTA NEWS

Dean Allen of the College of Engineering of the University of Minnesota has been asked by the Y. M. C. A. to establish their schools of Engineering for the American soldiers in France and to supervise them during the period of demobilization. However, he has declined the appointment because of the new work he is organizing here.

We have already spoken of the fact that Assistant Superintendent Greer has reorganized the art department of the public schools. In carrying out this plan Miss Carrie L. Wilkerson, supervisor of the art courses, explains that hereafter every child who graduates from the eighth grade will have had an opportunity to learn how to plan a house and figure the cost of construction, and also will be able to select harmonious colors and materials for interior decoration. If the all-year school plan goes into effect she expects to teach the children the proper landscaping through the school garden work. The course in landscape gradening will commence in the first grade and continue thru the high school.

District No. 10 of the Rehabilitation Division of the Federal Board for Vocational Education has been organized with offices at 742 Metropolitan Bank Building, Minneapolis. Harry W. Jones, for thirty years a practicing architect, has been appointed District Vocational Officer. As his assistants, Mr. Jones has F. R. Bigler, formerly with the Red Cross hospital in New York, as supervisor of cases; C. A. Zuppann, formerly director of technical courses at Central High, Minneapolis, as supervisor of advisement and training; and Joseph Vance, principal of the Adams school, Minneapolis, one of the Field agents. The case board, composed of Mr. Jones, Dr. Leslie Lane, medical officer, H. M. Gardner, representing employers, and E. G. Hall, president of the Minnesota Federation of Labor, representing employees, has begun work. The first three soldiers who applied and were passed upon chose automobile mechanics and business courses, two the former and one the latter.

On October 8 Minneapolis Central High opened an industrial night high school. Trade extension classes were formed in the following lines: gas engines, automobile repair, machine shop

(Continued on p. XIV.)

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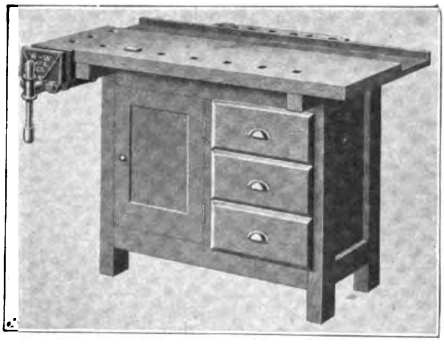
We have long endeavored to produce Manual Training Furniture superior to any other in America. We have spent much time and money in developing a line that adequately fulfills our ambition.

You have frequently heard our assurances on this point, and it may interest you to know that by far our greatest volume of business each year now comes from schools supervised by educators who have known Kewaunee equipment elsewhere.

We might put it this way: That our best advertising and sales argument is the Furniture itself.

Besides telling the truth about the leading line of Manual Training Furniture, our new Book presents hundreds of spontaneous expressions from educators who are personally familiar with its record in the class-room. It will interest you.



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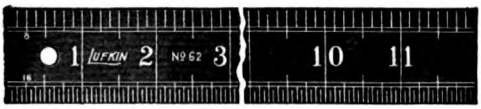

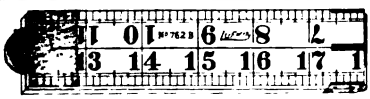

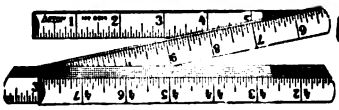

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Complete high grade lines
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THE LUFKIN RULE CO. **Saginaw, Mich.** New York No. 106-110 Lafayette St.

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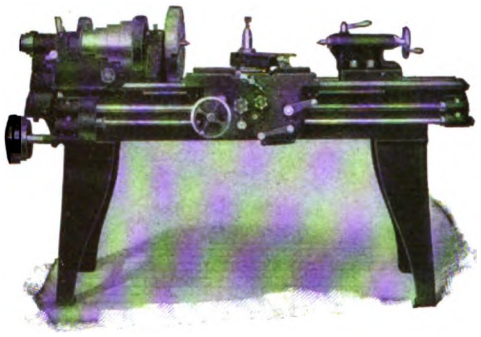
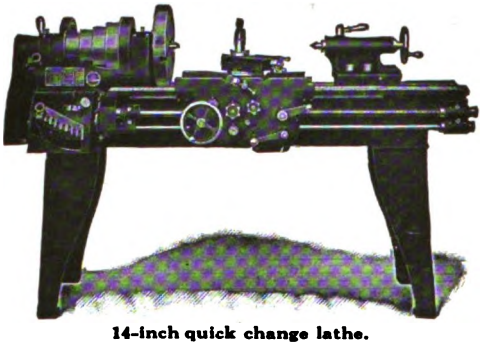
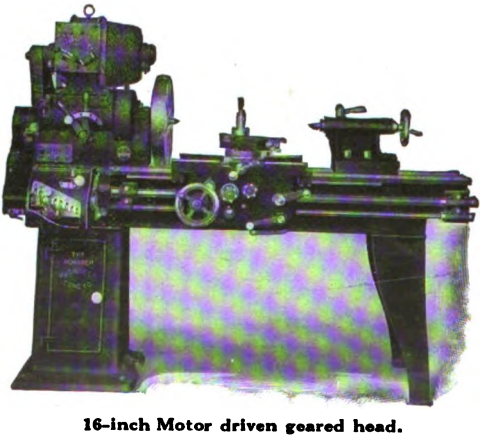


14-inch MONARCH standard lathe.



14-inch quick change lathe.



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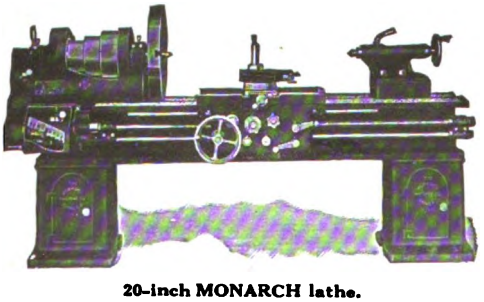

20-inch MONARCH lathe.

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from 14 to 20 inch swing

offers the ideal lathe for the manual training school. They are furnished in any style and with practically all attachments desired.

MONARCH lathes are low in price yet are as accurate as the highest priced lathes. By installing **MONARCH** lathes you can in many instances put in **two MONARCH** lathes for the same cost as **one** of the high priced lathes.

MONARCH lathes are in use in many factories and tool rooms with lathes costing almost twice as much doing just as much and as accurate work.

It is not necessary to pay a high price to secure a good engine lathe.

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VOLUME XX No. 5

MANUAL TRAINING MAGAZINE

JANUARY, 1919

TEACHING OXY-ACETYLENE WELDING

I. THE INDUSTRIAL VALUE OF WELDING

LIEUTENANT CYRUS RICKEL,
Camp Herring, Peoria, Illinois

General Manager: "Just when we need it the most, and it will be six weeks before we can get a replacement part from the factory.".

Factory Manager: "A representative of one of the Welding companies here recently claimed to be able to repair such breaks and have the machines running again in a very few hours. Shall I call him and give him a chance at it?"

General Manager: "It is no good to us as it is. If anybody can repair t have them do it quick and don't mind the cost."

How many times has such a conversation taken place in the past few years! The number would be unbelievable, and the beauty of it all is that in ninety per cent of the cases the welder made good.

In the spring of 1917, when this country declared war on Germany and tyranny, there were many interned German ships in the harbors of this country. They were seized at once, but upon examination it was found that all of them had been deliberately damaged. With the most fiendish cunning all parts of the machinery had been broken, had been ruined with emery dust or set so that they would collapse with terrific loss of life if used. The steel structure was cleverly cut almost in two in many places and the cuts filled with putty, then repainted. Prominent engineers estimated that several years would be required to gather the old parts, put them together, and then make new ones, but a couple of wideawake engineers said, "Let us try to repair the broken parts." So with the aid of several good representatives of both the oxy-acetylene and electric welding companies, these parts were put together. Where pieces had been knocked out and were missing, new parts were cast in. The steel beams, so cunningly cut with the oxy-acetylene cutting torch, were welded up with the oxy-acetylene welding torch, and in less than one year all of the ships were in commission and carrying our soldiers over the sea. In my opinion this great feat brought the value of welding home to this country more than any other one thing. It proved that the impossible could be accomplished. Today the welding apparatus is the most useful instrument in use, in the ship yards of the Navy and of private concerns.

The shortage of ships on the Atlantic was acute. To aid it a suggestion was made that ships on the Great Lakes be used. But where could they be taken to the coast? No canal was big enough nor lock long enough to accomodate the ships worth tak-

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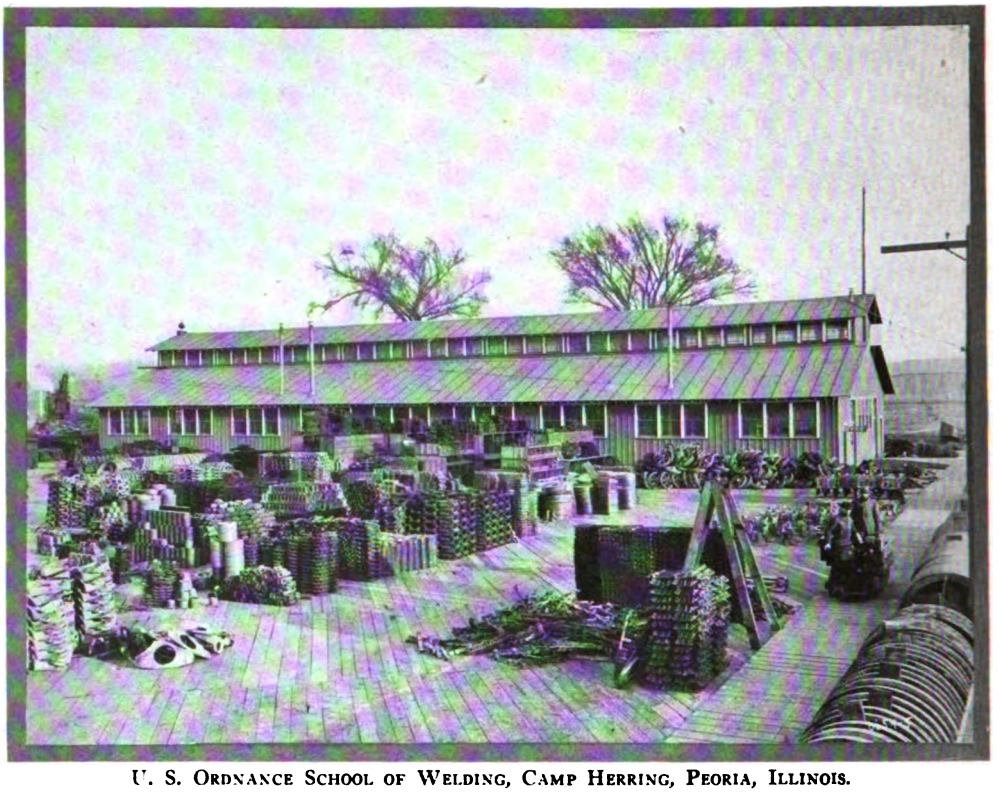

U. S. Ordnance School of Welding, Camp Herring, Peoria, Illinois.

ing. So these ships were drydocked, were cut in two and the open ends covered with a watertight bulkhead, were taken thru the Welland canal to the Atlantic coast, and they were welded together again, and in an incredibly short time were in commission. This sounds simple, but it was a feat, performed with the oxy-acetylene torch, that was as daring and as worthy of praise as the victories of our armies at the front.

With the putting of the metal industry upon a war basis, and the control of the metal market and production by the government, a great shortage of all commercial metals has resulted. Many plants can not secure metal at all, others only in limited quantities, and therefore their ability to supply parts for former products has been cut to a minimum. Particular reference can be made to farm machinery and automobiles. In order to keep these machines running, it has been necessary to have the broken parts welded, and there is practically no part of these machines that can not be welded with the oxy-acetylene flame. Crank shafts, crank cases, engine beds, pistons, cylinders, frames, housings, etc., are now considered easy to weld, because so much of this work is being done daily. Old parts that are worn out can be built up, new metal added and then re-machined to proper size. The welding torch is the only "putting-on" tool that is available today. Restricted in their output, the manufacturers of farm machinery were simply swamped with orders for parts. They couldn't supply one-tenth of the demand. But did our harvests suffer from want of machinery? No, the welder in the nearest town got on the job and fixed the the farmer out. Sometimes it costs more, to be sure, to weld some

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single part; but what is cost at such a time?

Foundries trying to keep production up with orders, both steel and iron, found that a much larger proportion of their castings were coming out with blow holes and sand holes than before. In fact, in some cases as high as 50 per cent or more of their castings were defective for these reasons. The causes were numerous—too much scrap metal, too green a sand, etc.—but it was the best they could do under the circumstances. The question was how to save as many as possible. Again the welding torch was used, and in most foundries today there will be found as many welders as can be secured, doing nothing but filling such holes and defects in castings. Several foundries that the writer has visited have their welding apparatus set up where the castings, red hot from the mold, may be welded while in this condition, which means a big saving in time and gas.

From the foundries these castings go to the various manufacturers. They may be making engines for trucks or airplanes, tractors, tanks, shells, gun mounts, or any of a thousand things now needed in great quantities. The faults that were prevalent in the foundry may not have been discovered; they may have been buried under a thin layer of metal, and not show up until that piece was practically finished and ready to go into assembly. In such cases the completed part must be scrapped, entailing great loss, more of time than money. Again these manufacturers have arisen to the occasion. Possibly they had one or two welding outfits for machinery repairs. Now these men are swamped with work for production and every foreman is clamoring for their services. Welders are hard to get, and in most cases it was necessary to train their own men. In the meantime the scrap yard was filling up fast, and production almost at a stand still, for the want of a few parts, the castings for which were bad; or else, thru carelessness of some machine operator, hundreds of pieces were spoiled before the wrongly set die or template was discovered. Then the newly established welding department started reclaiming these pieces, not so much for the value of the work itself but to get out products on time; marvelous results have been accomplished.

At no plant, however, has this phase of welding been as carefully worked out, and as great results obtained, as at the plant of the Holt Manufacturing Co., Peoria, Ill., in connection with which the Ordnance Department of the Army has established the only successful welding school. The Holt company manufactures the Caterpillar tractor, now familiar to all of us, and is running to capacity on Government work. When the Welding School was first established, the Holt officials knew nothing of welding or its possibilities. To say the least, they were very sceptical. But the daily growing scrap pile was a sore spot in the eyes of the two lieutenants in charge, who had been in the welding business in civil life for several years, and an arrangement was made whereby the school was to do the production welding. The writer worked out a very efficient cost system, and starting with one class at the first of the month, an accurate check was kept of all work turned out. This amounted to over 600 separate pieces at a saving in money of over $9,000 at bare cost figures obtained from the Government accountants. In the month of October, altho handicapped by the epidemic of influenza, over 2000 pieces were welded with a saving of over $25,000, not to mention the help to production. Incidentally the Army at the end of each month has a class of real welders, ready to go out and do their important work at the front, much of which will be on the same parts they worked on at the School.

We now know that until recently the railroads of this country were in very bad

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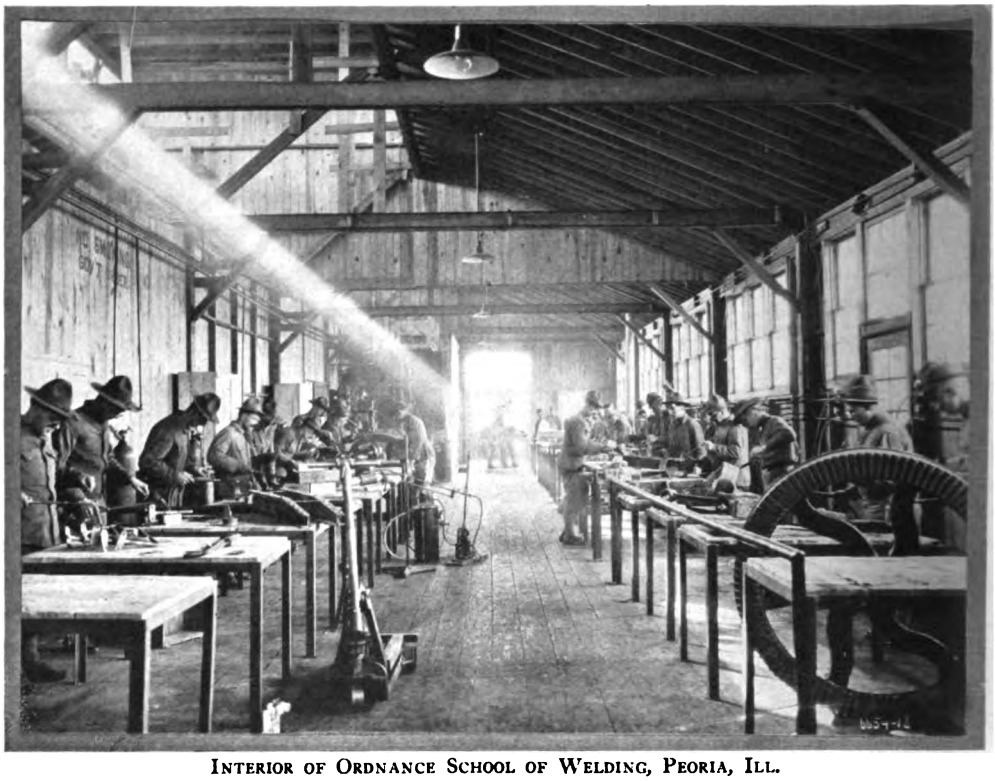

INTERIOR OF ORDNANCE SCHOOL OF WELDING, PEORIA, ILL.

shape thru raising costs and decreasing rates. They were, in fact, desperate and eagerly grasped the opportunities offered for saving by the use of the oxy-acetylene flame. Some of the hardest welding ever done has been turned out in railroad shops, but little attention or credit has ever been given it. Few of us realize the tremendous strains that a locomotive is called upon to stand. But the shop foreman does only too well, and when he can repair cylinders weighing thousands of pounds, cracked or broken thru valves, ports, exhaust chambers, or bores, without even removing the cylinder from the locomotive, he is crazy with delight. Also, when he can patch the crown sheet, weld in the flues, repair the mud ring and the side sheets, many of his troubles are removed. In addition to this, broken frames are welded in place, flat spots are welded on tires, saving their replacement or skidding, and innumerable other repairs made. In the car shops the big trucks are repaired, the steel bodies welded together. In fact the statement that the railroads could not operate 25% of their equipment today, if it were not for the oxy-acetylene welding torch, is not too large.

The welding torch has invaded the manufacturing field, and we find today that nearly all of our metal barrels, metal tanks and nearly all sheet metal products are welded. Our aluminum and sheet steel kitchen utensils are welded, automobile bodies are welded, metal furniture and office furniture is welded—all at a saving in time and machinery. There are many old pipe lines where cast iron flanged pipe was used with the joints filled with lead. The scarcity of lead today is very acute, and its salvage to be recommended under all conditions. To chip this lead from the

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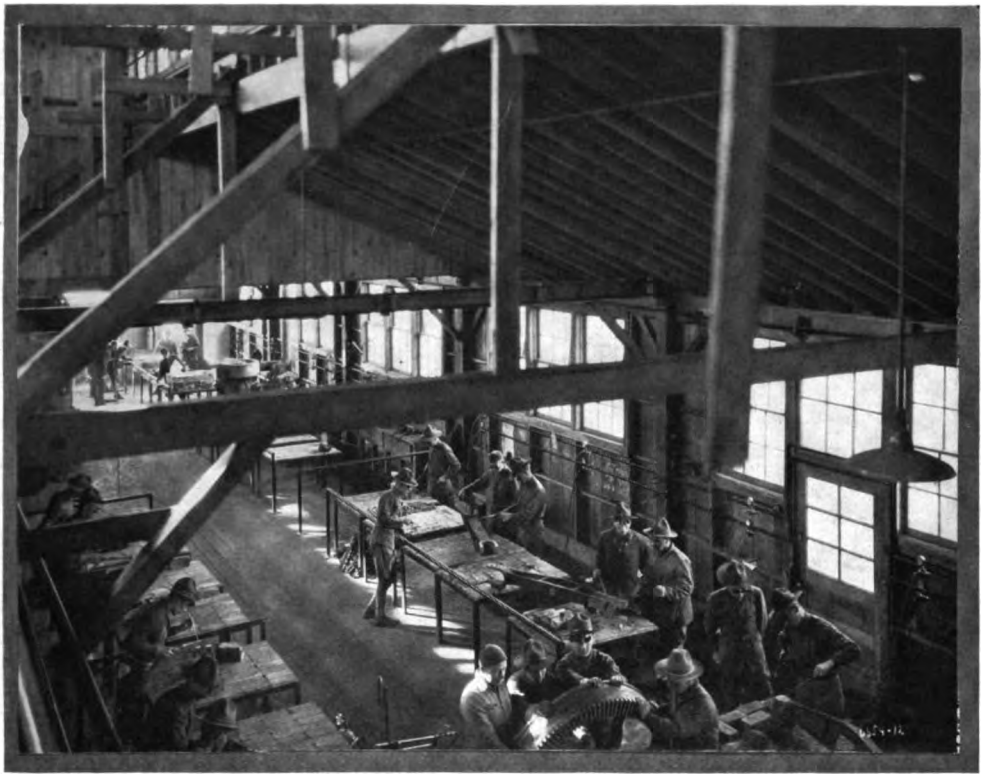

LOOKING DOWN ON THE WORKERS.

joints is a laborious, wasteful method, but by the proper use of the heat of the welding flame it is rendered simple and economical. In the laying of pipe, the great problem has always been to get it tight, to hold without leakage the substance it is to carry. To do this has required a large number of costly fittings. Now, however, all new pipe lines of any importance are being welded. In some cases lengths as long as 400 to 5000 feet have been welded on the surface before being lowered into the ground, or into the river or lake or harbor, as the case may be. The ends are then welded together and a perfect job is assured. In this work branches at all angles are easily welded into the main pipe, angles are easily turned, and small pipe welded to large pipe. Old pipe lines already laid are easily repaired by welding the breaks or welding in new sections.

By the addition of an extra oxygen jet to the welding torch a tool is acquired which will cut steel and iron. This is called the oxy-acetylene cutting torch and is of almost as great importance as the welding torch. When the battleship Maine was raised from the harbor at Havana, Cuba, the immense sheets of armor plate, the heavy machinery, etc. was a tremendous problem to handle in its twisted shapes. The cutting torch was here called into service and these immense pieces of steel were cut to such a size that they were easily handled. At the time the big Quebec bridge collapsed, that was to span the St. Lawrence river, it was the oxy-acetylene cutting torch which cleared away the wreckage and made room for the new sections. Now that all steel is so hard to obtain, a larger percentage of scrap steel is being used, and at a greatly increased price.

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Every big scrap metal dealer today has one or more cutting torches working continuously, cutting up old boilers and other pieces of scrap steel. In the foundries these cutting torches are in use for cutting off the large steel raisers, and in boiler shops or ship building yards the cutting torch is saving the labor of many men and much machinery by cutting steel plates to the desired size.

This is only a brief summary of a few of the many uses to which the oxy-acetylene welding and cutting torch is applicable today. The extent to which it will be further used depends entirely upon the ingenuity of its operators as the emergencies arise. The welding industry today is growing faster than any other, and in quantity and value of its products surpasses any other mechanical industry. For these reasons it is certain to receive a great deal of attention in the years to follow. Already many of the important educational institutions are preparing to teach the principles of welding, and practically all of the mechanical educational institutions will be called upon sooner or later to take up this work.

In the training of welders, both in civil life and for the U. S. Army, the writer has had a chance to devise and work out various methods of instruction, and some of the most successful of these will be outlined in the articles which follow in this series. It is hoped that these will be of value to the men who will be called upon to train welders in the near future in educational institutions.

THE ATTITUDE OF ORGANIZED LABOR WITH RESPECT TO INDUSTRIAL EDUCATION

JOHN W. HOYER

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THE movement for industrial education, which of recent years has attracted the attention of every one connected with or concerned in our educational problems, is ordinarily thought of as a recent movement, yet it is nearly a century old in the United States. And a very significant fact in connection with the recent agitation is this, that the Labor movement gave the first great impulse to industrial education. Labor's attitude toward general education has not generally been known, and as a rule, Labor's attitude with respect to industrial education has been misunderstood.

The Labor movement was among the first to go on record as favoring and endorsing industrial education. The following resolution setting forth the principles and program of organized workers, was adopted in 1829 by the working men and women of New York: "Resolved, that in the opinion of this meeting it behooves us, before attempting any minor reforms, to unite our efforts and our votes to carry thru our state legislature the great regenerating measures of a national education to every child who is born to the Republic, an enlightened practical and systematic course of instruction including the knowledge of at least one trade or useful occupation and a comfortable maintenance during that course of instruction at public expense."[1]

In 1830 a resolution demanding a liberal system of education, especially in the sciences which pertain to mechanical employments, was adopted by the working men of Boston. During the years that have fol-

[1]Bulletin 13, National Society for the Promotion of Industrial Education, page 170.

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lowed, organized labor has always been in favor of an efficient, fair system of industrial training. The American Federation of Labor was one of the first great national organizations to issue an official notice of its interest in the subject of industrial education, and to begin a serious study of the problem thru the appointment and reports of its committees. The first of these was appointed in 1903 to investigate means whereby the labor unions could secure from the public schools the kind of education needed to satisfy their needs, and its successors have been at work ever since. Committees were appointed in 1904, 1905, and 1906, but no definite action resulted. All efforts for the introduction of more efficient and more extensive industrial education and for teaching the technic of various industries were endorsed by the American Federation convention in 1907.

It was in 1908 that great progress along the lines of industrial education was reported by the Committee on Education, who presented to the convention resolutions with recommendations.

Whereas this group also favors the training of the student or apprentice for skill in only one industrial process, thus making the graduate a skilled worker in only a very limited sense, and rendering him entirely helpless if lack of employment comes in his single subdivision of a craft; and

Whereas the other group is composed of great educators, enlightened representatives of organized labor, and persons engaged in genuine social service, who advocate industrial education as a common right, to be open to all children on equal terms, to be provided by general taxation and kept under the control of the whole people, with a method or system of education that will make the apprentice or graduate a skilled craftsman in all branches of his trade; and

Whereas organized labor has the largest personal and highest public interest in the subject of industrial education, and should enlist its ablest and best men in behalf of the best system, under conditions that will promote the interests of the workers and the general welfare; now, therefore, be it

Resolved, that the president, in conjunction with the executive council of the American Federation of Labor, be, and is hereby authorized to appoint a special committee of at least fifteen, to be composed of a majority of trade union members of this convention, who will serve without compensation and incur no expenses other than necessary and legitimate expenditure within the judgment of the president and executive council, to investigate the methods and means of industrial education in this country and abroad, and to report its findings, conclusions, and recommendations to the next annual meeting of the American Federation of Labor.

These resolutions were adopted and a special committee was appointed.

At the annual convention in 1909, the president of the American Federation stated the position of the Federation as in favor of true public industrial education, but opposed to narrowly specialized training under control of private interests. He took the stand that technical education of the workers preparatory for work in the trades and industries was a matter of national concern, and it should, therefore not be regarded as a private function but as something to be controlled by the public and supported at public expense.

The special committee's report on industrial education was published by the Federation in 1910. Before 1910 no authoritative statement of the position of organized labor had been generally published. A definite statement had been greatly needed, for with no knowledge or assurance of the attitude of labor, the schoolmen and the employers had to "reckon without their host," because the wage-earners and their children, who are to be trained for greater efficiency, are most closely connected with the problem. Until this time those advocating the movement for industrial education were not positive of the attitude of organized labor

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on account of the varying attitude of the labor unions and their leaders. The attitude presented in most parts of the country, altho not definitely nor uniformly taken, had not seemed cordial or co-operative but had sometimes seemed decidedly antagonistic. This report showed conclusively that organized labor favored the extension of industrial education to the public school system.

More friendly and united opinions on industrial education between the unions and those outside was hoped for when the American Federation, in 1908, appointed its special committee "to investigate the methods and the means of industrial education in this country and abroad." That this hope was well founded is shown by the preliminary report, submitted to the Toronto convention in 1909, which may be considered the most important report of the convention.

The committee reported the need of greater efficiency in American industry. Defective schooling and lack of apprenticeship was stated to be the cause of the inefficient training of the working people, who, because of poverty, are forced to begin the battles of life at too early an age to obtain proper training. Lack of interest on the part of pupils and the dissatisfaction of the parents due to the impractical training were given as the cause of so many children leaving school at an early age. "The pupils become tired of the work they have in hand and see nothing more inviting in the grades ahead. They are conscious of powers, passions, and tastes which the school does not recognize. They long to grasp things with their own hands and test the strength of materials and the magnitude of forces."[2] Great numbers of those who leave school early are admitted to have been influenced by "the silly notion" that the office or store is "much more genteel and fitting" than the crafts and the shop. Industrial training as a part of our public school system, it is claimed, will eradicate these faults and fallacies, especially with this training supplemented by the influence of the unions themselves. Organized labor says that "the future welfare of America largely depends on the industrial training of our workers and in protecting them. It contends that if the American workman is to maintain a high standard of efficiency the boys and girls of the country must have an opportunity to acquire educated hands and brains such as may enable them to earn a living in a self-selected vocation. No better investment could be made by legislation, according to this report than in extending the land-grant policy, inaugurated by Congress in 1862, to the promotion of industrial training in the public schools.

Since 1911 when the Federation endorsed a bill in Congress for national aid for the establishment of vocational education in the public schools of the country, the American Federation has constantly and consistently supported the establishment of industrial education in the public schools. In 1912 Charles H. Winslow was authorized, by the executive council of the American Federation, to prepare the final report of the special committee, which was accordingly submitted at the Atlanta convention. In this report the Federation went on record in favor of nation-wide development of industrial education.

Further evidence of the friendly feeling of organized labor is shown by the report of an investigation conducted by the Royal Commission on Industrial Training and Technical Education in Canada. The representatives of organized labor who appeared before the commission were asked whether they personally, and the unions

[2]Industrial Education, Published by the American Federation of Labor, 1910, page 13.

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they represented, were in favor of provision being made for the introduction and advancement of industrial training and technical education for the workers. The answers to this question were all favorable toward industrial education as a public service and for the introduction of industrial education in the locality for the needs of all workers.

That organized labor has recognized the need of industrial education for several years is proven by the fact that many of the unions have established schools for the more efficient training of their members, having grown tired of waiting for the public schools to furnish this training. Many others have considered the advisability of doing the same thing unless better provisions are made by the schools.

In addition to the establishment of schools, almost all of the union papers and journals have conducted a department for the education and advancement of the union members. One of these papers, the official organ of the Carpenters and Joiners Union, has conducted such a department for over thirty years, showing that they felt the need of industrial education for the workers who are already in the trades.

The unions recognize the fact that if the United States hopes to maintain its place as a leader in the industrial world, industrial education must be pushed to the limit, and that every boy and girl who goes into industry must have not only a general education, but also an industrial training that will fit them for their industrial position.

The desirability and need of industrial education is shown by the report, of a survey, to the Iowa State Teachers Association, in November, 1914. In answer to questionnaires sent to ninety-six labor organizations representing twenty-nine industries the following reports were received:

	Yes.	No.	No Answer.
Prevocational Training	79	14	3
Industrial Education for the 14-to-16 year old child	82	11	3
Public Evening Course	78	9	6

The continuance of the favorable attitude of the American Federation is shown by the following extract from the Report of the Executive Council of the American Federation of Labor to the 35th Annual Convention held at San Francisco, November 8, 1915:

> In connection with the subject of industrial education and vocational training, we submit that the federal government should afford generous financial aid to this matter fraught with so much value to the workers, to the people generally, and to the stability of our country. In our judgment there can be no better preparation of the United States than intelligent understanding and effective work in industry. Our movement has already established the system of educating men and women engaged in agriculture and horticulture, and affording the best opportunity for the sons and daughters of the farmers of our country so they become more intelligent and more efficient workers in agriculture.
>
> We submit that an introduction of that system, so that it will apply to the mechanic, artisan and laborers of the United States, is the opportunity of wisdom, foresight, economy and broad-minded self-interest and betterment to extend the federal plan of operation to industrial education, vocational training, civic rights, duties and responsibilities.

While the attitude of organized labor, especially in recent years, has been in favor of industrial education, it must be admitted that there has been some opposition to it on the part of the unions. This opposition has not been toward the fundamental principles, however, but toward specific proposals or certain schools. That is to say, the labor unions are opposed to any form of industrial education that has for its main purpose the exploitation of the student.

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They do not favor any industrial training that has a tendency "to narrow the student's mental outlook and make him more dependent." They strongly protest against that industrial education which tends to turn out incompetent or inefficient workmen. They say that this type of training will not only lower the standard of the industry but is detrimental to the boys' interests. And that, "he, who is given such an education, making of him a 'half-baked' journeyman, as it were, by a process which converts the school into what is commonly called a 'scab-hatchery,' is not a needed acquisition to the ranks of labor." The insufficiently trained workmen are unable to deliver the skilled services which they are called upon to supply, but are in competition with the thoroly trained mechanics, who, consequently, are not in favor of any school which attempts to deceive the students into the belief that there are any short cuts to industrial efficiency. An oversupply of workers in some or all the trades has been feared by some of the unions unless provision is made for the regulation of supply and demand.

In some of the minor trades the objection to trade schools is most strenuous on the ground that the training in such schools has a tendency to increase child labor. This may be the case if our zeal for industrial education allows it to develop into a "lopsided" education with the single aim of turning out a mechanic. But labor stands for a broad training in connection with the industrial training.

The chief objection, however, seems to be in regard to the control of industrial education. How shall it be organized and supervised? The unions are most emphatically opposed to private control on the ground that the schools run by the private corporations are generally run for profit to the stockholders, rather than for the welfare of the student. The boy who receives his education in such a school is surrounded by influences detrimental to labor union ideas and should he show labor union tendencies is expelled from the school. The unions are firm in the belief that the industrial education should come under the control of the public school system and not connected in any way with private trade schools. One of the strongest reasons for this is stated as follows:

> Employers fly to the privately managed trade school in times of industrial trouble, strikes, and lockouts in order to get young men to fill the jobs left vacant by the strikers. After the strike is settled these men are the first to be let out because they are incompetent.

The American Federation of Labor's special committee report says:

> While we are willing to subscribe to any plan that offers efficient and practical instruction in productive operation, we do insist that emphasis must be placed on education rather than product.
>
> There must be a minimum of product and a maximum of education. In short, construction for instruction, not instruction for construction.[1]

Thus the position of labor is squarely taken against exploitation, narrow specialization in training, graduation of inefficient workmen, production of an over-supply of workers in any one trade, the tendency toward child labor, and especially against private control of industrial education. While favoring industrial education in general, the American Federation of Labor and its allied unions protest against private control, alleging that inasmuch as it is for the general and national welfare, it should be controlled and paid for by the public. With these objections removed organized labor is very strongly in favor of industrial education.

[1] Senate Document, No. 936, page 20.

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A VOCATIONAL COURSE FOR MACHINE SHOP APPRENTICES

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THE Rochester Shop School in which this course for machine shop apprentices has been given was organized to meet the requirements under the New York State law providing aid for vocational schools. A synopsis showing the time devoted to each subject follows:

FIRST YEAR

Subject	*Hours per week*
Shop Practice	15
Mathematics	3
Mechanical Drafting and Shop Theory	4½
Industrial History	3
Industrial Hygiene	1½
English	3
Total	30

SECOND YEAR

Shop Practice	15
Mathematics	3
Mechanical Drafting and Shop Theory	4½
Civics	3
Industrial Hygiene	1½
English	3
Total	30

In establishing this course about five years ago, following the rational tendency in industrial education to substitute work upon practical, useful projects for work upon useless exercise models, we decided to build a 12″ engine lathe—a standard commercial article offering a wide range of work,—and to make this the standard product of the shop. (This was also made the basis of our work in pattern making). After deciding to build this particular machine the operations upon its parts were classified and carefully graded according to a difficulty scale for machine shop operations, to get an effective instructional order, and standard practice instruction sheets for the parts were gotten out.

There were of course many more of the simpler pieces for the lathe made than have been used in completed machines, but this fact gave opportunity for the selection of the best, and this in itself afforded an incentive for all to do the very best work, with the thought that finally theirs would be the pieces selected for the completed machine. And the parts discarded entailed no more loss in material than the throwing away of an equal number of exercise pieces.

The methods of instruction in the shop were made to approximate the methods in industry, where systematic attempts to instruct have been made in industry, and the conditions were made as much like actual shop conditions as possible. The boys, as before stated, worked upon a product with commercial value and the shop as a whole was building a standard product. The pedagogical soundness of this is not doubted by those who have given the plan a trial. There is an interest and fascination about the work on a real product which grips and holds the boy. He feels that he is doing a man's work, a tradesman's work, and takes immense pride in it. He is also greatly interested in seeing the class project grow and is fascinated to see something of his work fit in with the work of others to make a complete machine. No course in models could ever serve the same purpose. Again, in industry the apprentices use blue-prints which have appended to them certain operation instructions. The school used blueprints and instruction sheets. No more demonstration work was done by the instructor than was necessary, it being fully realized that the main function of shop instruction was to develop manipulative skill,—and obviously the best method was

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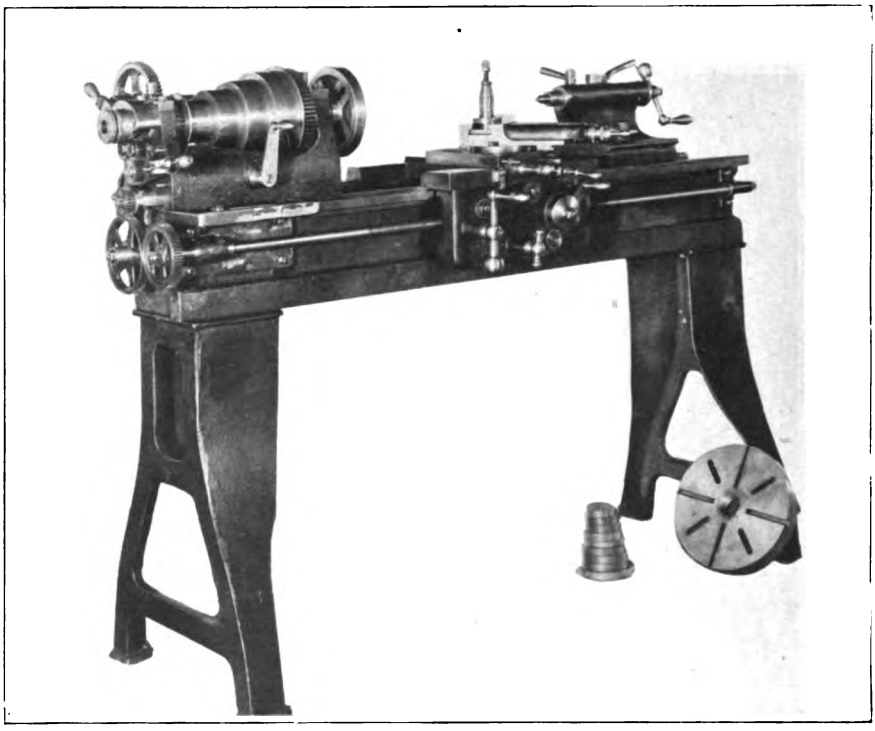
to require the learner to perform, himself, the trade operation.

The drafting for this machinist's trade class had as its object, not the development of fine drawing technic, but rather the ability to read drawings rapidly and accurately, with ability to make shop sketches and a fair working drawing. The work was confined to projects of the machine shop, and all drawing and blue-prints used in the machine shop were made by the boys in the drafting rooms. This assured perfect correlation and supplied a fine interest. The geometrical problems which are usually given (after lettering sheets) first in a course, were not given unless they could be applied directly to the making of a real drawing. It was found that the same simple parts of the lathe which offered good material for beginning work in the shop also offered equally good material for the drafting room. Before the end of the second year the boys were completing very creditable assembly drawings.

The same instructor who taught the drawing, himself a machinist, also taught the shop theory and mathematics. In mathematics, as in drawing, he made the shop experience of the boys, so far as possible, the basis of the work. The following subjects were covered in mathematics and shop theory: Fractions; least common multiple; percentage; equations; the four fundamental operations in algebra; mensuration; speeds of pulleys; speed of gear trains; screw-cutting calculations; gear and gear making calculations—spur, bevel and spiral; calculations of weights and cost estimating; micrometer and venier explanation and drill; strength and composition and use of materials; feed and speed calculations (cutting lubrication); power, work and en-



ONE OF THE LATHES MADE AT THE SHOP SCHOOL, ROCHESTER, N. Y.

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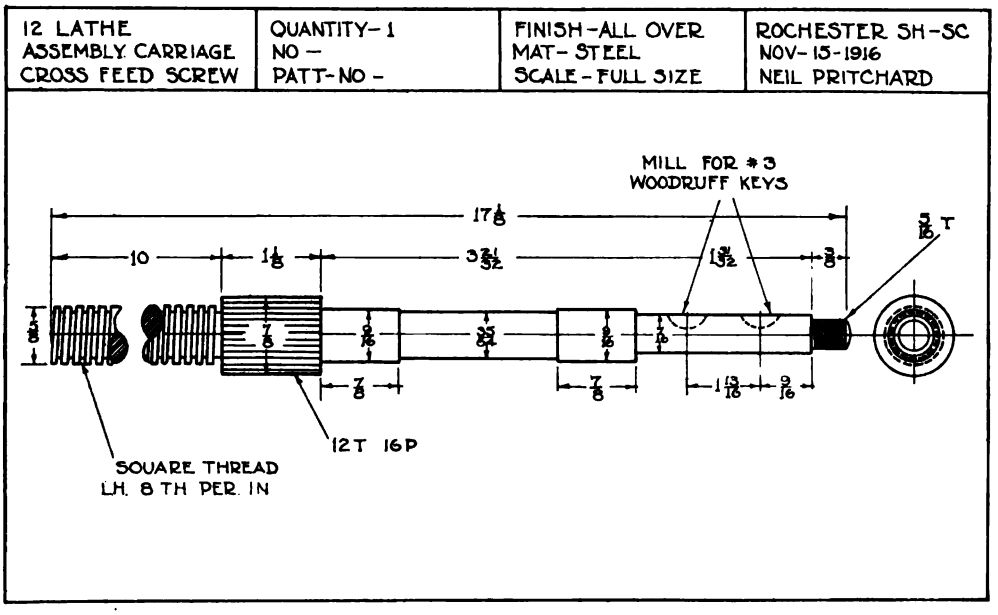
ergy; mechanics; friction and lubricants; applied power and driving of machines; shop trigonometry (closely applied); logarithms; safety devices. It has been objected that trigonometry and logarithms have no place in an apprentice course for boys who have completed but the first eight grades in the common schools. To this objection the instructor's own words were: "Shop trig. is a subject very urgently required in the shop to 'prove' distances, to cut spirals, to work out bevel wheel calculations and for many other purposes. Not more than a small amount of it, however, is required. It is proposed to teach very little more than the elementary functions of trigonometry and the working of trigonometrical tables, but to drill exhaustively with closely applied subjects. Trigonometry and like subjects are really tools for the machinist, and as such, are important, and should be supplied to the machinist to work out his problems."

In drawing, mathematics and theory the individual instruction sheet was used, each sheet or set of sheets containing a definite unit of instruction. The work from the sheets was supplemented by the use of parts in drawing and talks and explanations by the instructor, or class discussions in the case of mathematics or theory. Note-books were also required to be kept in connection with this work, and instruction sheets were kept with the boy's notes in permanent form. The advantages of the instruction-sheet method are apparent. It permits the apt and industrious boy to progress as rapidly as he is capable while at the same time it gives the slow boy time to complete each unit thoroly before being dragged from it by the more rapid in the class. It permits boys who are absent, either for part time work or on account of sickness, to begin at the point where they left the work, with no loss. It facilitates the establishing of standards by which credit may be awarded. It makes possible, when used in connection with note-books, the accumulation of a valuable fund of reference material. If the



A Sample Drawing.

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boy is to be depended upon to use in after years the supplementary material which the school gives him, he must receive that material in such form that it will be taken away with him.

Under what was termed the social subjects, including English, civics, industrial history and industrial hygiene, the work given was not related directly to the shop-work, yet the effort was made consciously to develop vocational ideals and impart general industrial intelligence. The English instructor found much which served his purpose in trade magazines and standard trade books, but considerable time was spent in reading inspirational classics which had for their purpose the instilling of high ideals. Spelling, letter writing and the making of applications was not neglected. In civics the plan was to make the boy know and understand his community, his dependence upon it, and his responsibility for it. A special study was made of local apprenticeship conditions, the labor organizations in their relation to the employers, labor ideals, local employment conditions and related topics. Industrial history included a study of the growth of our modern industrial system with its European background, but more specifically dealt with the development of iron and steel tools and machines, with the influence of the more important inventions and scientific discoveries. In the industrial hygiene course the instructor put before the boys the dangers of accidents and taught them how to avoid mishaps by the use of safety appliances; sanitary conditions in local shops were discussed and also preventive measures to be used against occupational diseases. Most of the time, however, was devoted to a study of the general laws of health.

In the social subjects the supervised work method was used. (The lesson sheet was also used here to a considerable extent.) The whole one-and-one-half-hour period was usually devoted to one subject, and the time was spent collecting information from various sources, the instructor working with the boys. The public library was used freely. The last part of the period was then devoted to class discussion. Many complete reports were made by different boys on topics which they had spent considerable time investigating.

There has been abundant evidence that the course was good, for the boys have been in great demand, and are filling fine positions.

DEVELOPMENT OF VOCATIONAL EDUCATION IN CHINA

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IN THE June issue of this Magazine, a news item concerning vocational education in China was published, but it was brief and incomplete. The writer, as a student of vocational education sent by the Chinese government to the United States, and as a member of the National Association of Vocational Education in China, would like to present the following information to the people of this country who are interested in development of vocational education in China:—

China has a history of liberal education of two thousand years. In the school of Confucius there were six courses given: Courtesy, music, archery, horse-riding, literature, and mathematics. Its aim was to educate a typical gentleman. For two thousand years this same aim has been held by the educators, tho they changed the

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number of courses and the method of teaching.

About fifty years ago, China began to have a new era in the history of education. The idea of Western education was carried over to the Orient by a great number of missionaries, who opened schools in different parts of the old empire. Since then thousands of far-sighted people have realized that the old type of education should be reformed; but the government took no definite step until 1901, when the Boxer Rebellion was over. An edict was then issued by the emperor, stating that a public school system would be opened. According to that system, there were nine years of primary school; the first five years were called lower primary, and the last four years were called higher primary. Graduates of the lower primary could either go to the higher primary, or to what was called the technical school B, the lower technical school, which had a course of three years. Graduates of the higher primary could either go to a five-year middle school, a four-year normal school, or a three-year technical school A, which was a higher technical school. Graduates of the middle school could either go to a six-year university, a five-year higher normal, or a four-year professional college.

However, the idea of vocational education was not introduced into China at that time. Very few people went to technical schools. Even in these technical schools the courses given were not strictly vocational. Most of the well-to-do people sent their children to middle schools after they had graduated from primary schools, in the hope that they might get professional training in colleges and universities. The result was that several fine universities and colleges were opened in different parts of the country. Among them the following institutions are still leading: Peking Government University, the Chinese national university; Hong Kong University, founded by the British government; the Government Institute of Technology, a government engineering college after the model of Massachusetts Institute of Technology; Peiyang University, a government university of law, mining engineering, and civil engineering; the German Polytechnical College, opened by Germany but controlled by the Chinese government since the opening of the war; and Tangshan Engineering College, a government college of railway engineering.

Since the Republic has been established, the school system has been changed. The period of primary grades has been changed into three years for higher primary, and four years for lower primary. The period of the middle school has been reduced to four years. At the same time the people have realized that in order to solve social, economical, and educational problems in such a big country, education must be practical.

In 1913, the second year of the Chinese Republic, a movement of "practical education" was started by a number of prominent educators in China. A series of articles advocating the reformation of school schedules was published in *The Chinese Educational Review*. Meanwhile articles appeared in other magazines and papers. A book called "Practical Education in Elementary Schools" was published, and the elementary schools in normal schools first reformed their schedules in order to meet the needs of children. Mr. Y. P. Huang, one of the most prominent leaders in education, took an educational investigation trip, and made a campaign thru the country. Since then the words "practical education" have been deeply impressed in people's minds.

In 1914, the President of the Republic announced that education should be moral, physical, and practical. More articles and books were published. Different kinds of exhibits along practical lines were opened here and there.

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In 1915 and 1916, the demand for vocational education was so strong that a number of commissions were sent to this country, the Philippines, and Japan, and a number of societies along the line of vocational education were organized. In a union meeting of educational associations of different provinces, a resolution was passed that vocational courses should be put into the middle-school schedule. Many normal schools opened teachers' courses in vocational training. The Elementary Educational Association resolved that the course in manual training in elementary schools should be reorganized to meet vocational demands. A series of books on vocational education was published by the Educational Association of Kiangsu province.

The climax of this movement was not reached until the spring of 1917, when the National Association of Vocational Education was organized. Its purpose is to investigate the present condition of schools and vocations in order to eliminate the gap between them, to study and publish the literature along the line of vocational education, to encourage the opening of public and private vocational schools, to establish a model vocational school and an educational museum, and to organize a vocational guidance bureau.

In order to carry on its work, a large expenditure was necessary. The idea of vocational education was so deeply impressed in people's minds, that a great number of leading men began to donate their money to the Association. For instance, a Chinese merchant in Singapore alone has donated $10,000 for the expense of the Association.

The first step of the Association, besides investigation and publication, was to establish a model vocational school. A financial campaign was started. In less than one year, about $20,000 have been raised. A site for the school was located in the southern part of Shanghai. Work on the school building has been started, and the school can be opened in the fall. Four courses are going to be given first: metalwork, leather work, woodwork, and needle work.

According to the annual report of the Association, the membership has reached 900, before the recent membership campaign was started. Most of the members are prominent educators in China. The official organ of the Association is called *Vocation and Education,* which is published monthly. At the annual meeting last spring, an exhibit of vocational schools in Kiangsu province was made, to which about thirty schools sent their products. One of the most interesting features of the meeting was that all the refreshments, cakes, milk, etc., were furnished by the students of the different vocational schools.

The Association has been in existence only one year, but it indeed has already made a good beginning. The wave of vocational education has stirred up the whole country. China has only fifty years' history of modern education, but the progress of education has been by leaps and bounds. Millions of schools have been opened thruout the country. Since the establishment of the Republic, the number of schools has been doubled. In one of the sixty districts in Kiangsu province, where I made a visit in 1917, a complete school system has been worked out. They have agricultural, industrial, commercial, medical, and normal schools; institutions for cripples, for deaf and blind, and for old men and women; and an educational museum. One of the most interesting industrial schools is the Textile School, which is connected with a big cotton mill. The students have their own machines in the school, so that in the first year they can get practice there, and later on in the factory. It is expected that the district will have at least one public school in every sixteen square miles.

Among the branches of vocational educa-

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tion, China has agricultural, industrial, commercial, and home economics schools. Since the opening of the war, China has realized that she must put ships into the water as fast as she can. Moreover, at present negotiations have been going on between the United States and China to the end that China builds ships for the United States. It is hoped that vocational schools along nautical lines will soon be opened. The world will see a complete vocational school system in China in the near future.

PRACTICAL MECHANICAL DRAWING

MAX DRUCKER

Instructor in Mechanical Drawing, Bryant High School and Long Island Evening Trade School, New York City

OF ALL the studies in the high school curriculum I believe that there is none in so urgent need of revision as the subject of mechanical drawing.

In view of the fact that our best authorities consider knowledge of this subject as essential to a technical education and that our mechanics feel the daily need of the ability to read drawings in order to improve their worth as mechanics, it is surprising that the subject is held in such disrepute by the students in our high schools. Perhaps the fault lies in the methods of teaching the subject and in the organization of the subject-matter.

The interest which our mechanics in the evening schools take in machine drawing when presented in a practical way, leads me to think that the difficulty in our high schools is two-fold: I believe that we present the subject at the wrong time and in the wrong way.

It is futile for us to try to teach a subject which is totally foreign to the students' interest and understanding. The old theory that a pupil may be *trained* by forcing him to put forth effort to master a subject, no matter how devoid of interest it may be, has long been discarded. We now try to *interest* the student in his work, so that it will become a pleasure. The newer theory has justified itself thru the noticeable improvement in results.

In many of our high schools, mechanical drawing is still taught at the time when the student feels neither the desire nor the need for the subject. In most cases it is taken up before its use is known to the student; there is no motive for the study. The student does not as yet feel the want of another "language," because he has not as yet learned the subjects that demand expression in that language. Were the student, by a re-arrangement of the curriculum, made to feel that in order to continue his woodwork, machine work, and other manual arts work, a knowledge of mechanical drawing is necessary or even only desirable, this *motive* would be supplied.

As to the method of teaching mechanical drawing, I believe that we teach the subject wrong end first. While we apparently are following the educational principle of going from the simple to the complex when we teach the projection of a point and then the projection of a line, then of a surface and then of a solid, we forget that in reality the very hardest thing for a boy to understand is the position of a point in space. He is not ready for it either in ability or in previous training. The principle of psychology of education demands, that in the organization of the subject-matter the solid be placed first and the point last.

In all other language teaching, from Spanish to Hebrew, we have practically dis-

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carded the "grammar method" and have adopted the "conversational method." Experts realize that the fundametnal interest lies in *content* not in form; that the *idea* is supreme, and that the symbol is only a means of expressing that idea. So, also in mechanical drawing the content, contained in what is commonly known as the working drawing, should precede the study of the grammar of mechanical drawing, commonly called orthographic projection. Modern educational practice demands that we "motivate" whatever we teach. If, therefore, we are to teach the theory of mechanical drawing we must create the demand for the work on the part of the student, and this can most easily be done in the way indicated.

The problem in our evening schools is not a different one from the problem in our high schools; it is the same problem in an exaggerated form. Very few of the students who enroll in our evening courses intend to become draftsmen. The great majority of students are mechanics who wish to acquire the ability to *read* drawings. Many have immediate problems to be solved immediately. They may have been criticised for spoiling a piece of work, due to their inability to read the blueprint correctly, or they may see the promotion ahead of them blocked by their lack of knowledge in the matter of interpreting the drawing. They enroll in the course in mechanical drawing in the hope of being able to improve their condition. The instructor begins the course with the projection of an imaginary point and an imaginary line upon an imaginary plane; he shows how a line may be accurately bisected; he spends three evenings—which to the students means thirty cents in car fares—showing the class how to draw an epicycloid. Then follow other imaginary lines in innumerable positions with reference to "planes" not always very plain. Meanwhile the mechanic has come no nearer the solution of his problem. He determines that he is in the wrong course and that the knowledge that he seeks can not be found here, and since attendance at these courses is not compulsory, he decides to drop out.

It is with these ideas in view that the accompanying course of study has been planned. The course has been in use in the writer's evening classes for the last twelve years, and the results have been encouraging enough to make the writer wish to bring it to the attention of other teachers of mechanical drawing.

MECHANICAL DRAWING FOR THE MECHANIC

A. Reading of Drawings—

Lesson 1. Differences between a picture of an object and a mechanical drawing of it.

Purpose of the picture; purpose of the mechanical drawing.

Necessity for three views.

Arrangement of the three views.

Three views of simple objects drawn on the board.

Practice in drawing three views of simple objects.

Practice in selecting the objects when the three views are given.

Lesson 2. Use of the dotted line.

Three views of objects having invisible edges placed on board.

Selecting the object when three views are given.

Students make freehand sketches of the views of simple objects.

Lesson 3. Dimensioning a drawing.

Use of the scale in dimensioning.

Use of extension lines.

Signs for feet and inches.

Students' dimension drawings of previous evening.

Lesson 4. Drawings of objects having foreshortened edges.

Projecting lengths from one view to another.

Students make freehand sketches of simple objects having foreshortened edges.

Lesson 5. Finding the true length of foreshortened edge.

Drill exercises in finding the view in which the true length is given.

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Dimensions of foreshortened edges.

More sketches of simple objects involving foreshortened edges.

Lesson 6. Representation of curved surfaces.

Presentation of drawings of cylinder, cone, and of shafting and pulley.

Freehand, dimensioned sketches of cylindrical object.

Lesson 7. Methods of dimensioning circles and arcs of circles.

Use of abbreviations for radius and diameter.

Students' dimension sketch of previous evening.

Lesson 8. Necessity for showing hidden parts.

Use of sections of objects.

Methods of indicating sectional views.

Sectioning of the surface cut by the sectioning plane.

Students make drawings of sections of sectioned hollow cylinder.

Lesson 9. Representation of various materials in section.

List of important materials presented copied and applied to previous drawings.

Lesson 10. Use of outline.

Invisible edge.

Center line.

Dimension lines.

Scales.

Lines of motion.

Lines of alternate position.

Lines to indicate cutting planes.

Lesson 11. Conventional methods of drawing screw-threads.

Drawing of single and double threads.

Square and "v" threads.

Acme threads.

Lesson 12. Conventional representation of drilled and tapped holes.

Use of notes in this connection.

Methods of drawing nuts and bolts.

Lessons 13 to 16. Drill exercises in reading blueprints.

MECHANICAL DRAWING FOR THE FOREMAN

A. Sketching of Machine Parts from the Object.

Lesson 17. Sketching simple machine parts containing straight lines only.

Lesson 18. Sketching simple machine parts containing foreshortened edges.

Lesson 19. Sketching simple machine parts containing curved surface.

Lesson 20. Sketching machine part requiring section.

Lessons 21 to 24. Sketching and dimensioning more complicated machine parts.

B. Detail and Assembly Drawings.

Lessons 25 to 30. Reading of drawings showing detail and assembly views of simple machine, e. g. speed lathe.

Checking of dimensions of adjoining parts of machine.

Methods of indicating and numbering detailed parts in the assembly.

Lessons 31 to 34. Making of assembly sketch from three or four given details.

Lessons 34 to 36. Making of detail sketches from a given assembly.

It is good to be permitted to live in an age when great, serious, and perplexing problems are to be met and solved. For my part I would not care to live in an age when there was no weak part of the human family to be helped up, and when there were no wrongs to be righted. Through struggle only are great men and useful races produced.

—Booker T. Washington.

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MANUAL TRAINING, ITS TEACHER AND ITS METHODS

GUSTAF LARSSON
Principal of Sloyd Training School, Boston, Mass.

THE preparation of teachers in manual and industrial subjects should not differ essentially from the training of teachers in any other subject. The difference is only in the subject-matter taught.

We believe that the essential traits in any teacher are inborn and not acquired; consequently, one may find good material for teachers in any walk of life. On the other hand, many persons are teaching who would be happier and more useful to the community in other professions.

It is disheartening to think of the many children who lose all interest in school work and leave school because of a lack of sympathy and tact on the part of the teacher.

In view of these facts, it seems that the essential qualification in any teacher is first, a proper understanding of and sympathy with the pupils; second, a professional training in the art and methods of teaching; third, a mastery of the subject-matter.

We take these qualifications in order of importance, for in the case of teachers of industrial subjects the selection is often made on a reverse plan, a person being sometimes selected merely for his superior technical attainments. The result of such selection is detrimental to education. The lack of professional training in these teachers is often overlooked, as they are known as "special teachers." There should be no "special teachers," but always teachers of special subjects and having professional preparation.

One scheme of training teachers for industrial work suggested by the Massachusetts Board of Education is: (a) "The gathering of pupils with successful experience in the industries; (b) evening unit courses for the student while he continues to work at his calling; (c) each unit to deal with some phase or factor of the preparation required for an efficient teacher; (d) this to be followed by employment as an assistant teacher in an industrial school; (e) with obligation on the part of the school to give a certain amount of additional normal training to him after he enters the service."

To become supervisors of technical subjects the individual should have not only a thoro knowledge of methods of teaching and of the subject-matter to be taught, but he should also be possessed of a sound psychological knowledge of the child. Nothing short of this will enable him to estimate the fundamental value of work accomplished or attempted. To estimate the worth of manual training from appearances and material results is to miss the enduring principle that underlies all true progress.

Experience shows that short courses of a few weeks duration, in sloyd or manual training, at home and abroad, are good as far as they go, in that they may give new inspiration to teachers already engaged in the work and arouse a deeper interest in some who intend to enter the profession. To become strong leaders in the subject, however, requires at least one year of continuous work by especially well qualified persons. Nothing short of this can place sloyd or educational manual training on an effective foundation for vocational and industrial efficiency. A lack of training for teachers is the greatest drawback to all education.

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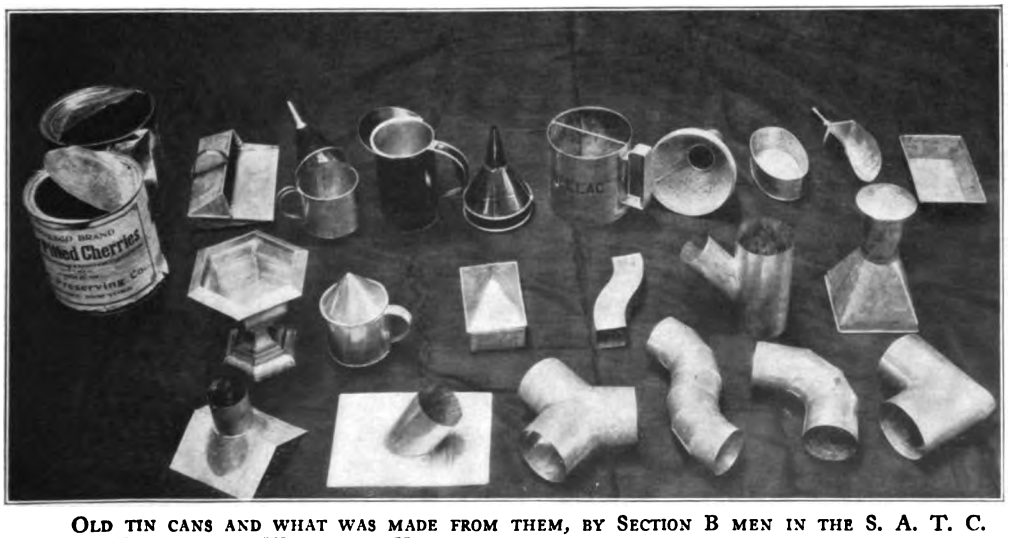
The training for industrial efficiency in some particular line seems to be more and more the aim of manual instruction in many schools. This aim cannot be realized, however, with large classes nor in the short time usually given to the subject.

Prevocational schools, so called, which are special schools of recent date, have been more fortunate in that more time is given and fewer pupils are admitted to each class. This enables the pupils to progress faster, according to their individual capacity. The prevocational schools naturally turn out greater visible products in a large variety of work, and the teaching and methods of these schools are, therefore, apt to be looked upon as far superior to the teaching and the methods employed in the usual manual training centres.

It is advocated by some educational authorities that certain phases of the predominating industries found in a community be selected as the basis for manual training, with the supposition that this will lead to an understanding of these industries, and most directly to profitable employment.

When, for instance, such industries as iron and steel work prevail, the motor training given in the schools should be directed to such elements and methods as are customary in that particular occupation; and in places where textile industries, shoe industries, electrical manufactures, or pottery, happen to be the predominating business of the place, the manual training in the schools should be directed accordingly. However, in studying the relative educational merits of different handicrafts it will be found that they are not of equal value when judged as to their power to produce general skill, or industrial efficiency. The most effective method of manual training for pupils under fifteen can be ascertained only thru careful observation of results, thru psychological tests, and thru the effect on the health and growth of the pupils. Further, all teachers should consider and apply the principles expressed by Münsterberg: "The smallest work carried thru with thoroness serves to train a child's mind toward a firm maintaining of an end."



OLD TIN CANS AND WHAT WAS MADE FROM THEM, BY SECTION B MEN IN THE S. A. T. C. AT THE UNIVERSITY OF WISCONSIN. HEAVIER METAL WAS USED IN A FEW OF THE LAST PROBLEMS IN THE COURSE.

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EDITORIAL REVIEW OF THE MONTH

CAPITALIZING WAR EXPERIENCES IN EDUCATION

THERE is very much to the credit of American educators in the fact that from one end of the country to the other the popular question now under discussion is "How can we make the experiences of the war count most in the educational development after the war?" Educators, no less than other men, have been thrilled by the war experiences. They have seen their former practices and limitations swept aside by war emergency, and new ones substituted with remarkable results. What was formerly regarded is impossible is now an accomplished fact.

DEFINITENESS OF AIM

SOME of the characteristics of these war experiences, so far as they relate to industrial education, were pointed out by the various speakers at the Conference on Manual Arts Teacher Training held in Terre Haute, Indiana, on the 5th, 6th and 7th of December, under the management of the U. S. Bureau of Education. At the first session Professor F. S. Bogardus of the State Normal School, Terre Haute, emphasized the fact that definiteness of purpose was a large factor in the success of the training courses for mechanics given under the Committee on Education and Special Training. "The Purpose of the course was concrete and immediate, not abstract and academic. The effect of this fact on instructors and soldiers was very important." Later in the conference Professor R. W. Selvidge of the George Peabody College for Teachers applied this conclusion to manual training, and said, "Let us put down our aim in such shape that we will know whether we reach it or not." Too often the stated definition of purpose as applied to a given type of activity in manual training is quite inadequate. Under the cloak of "general education" almost any kind of handwork may get into the schools, whether it is valuable educationally or worthless. The war work points to a better way.

At a recent meeting of the Schoolmasters Association in New York City, Dr. David Snedden stated that "seeing the end" is the cue to the new education. He said that unless the youths were to see what the end is in the courses they are pursuing we cannot expect them to show enthusiasm in their school work.

MATURITY OF STUDENTS

ANOTHER fact brought out at the Terre Haute conference was that maturity often compensates for lack of schooling. Professor Bogardus said that in teaching the war aims courses it was evident that "relative maturity along with the experiences of life, in the case of Section B men, was almost a fair compensation for lack of school training when it came to appreciating the fundamental elements of the courses. There was an evidence of feeling not possible with the younger men who had had less opportunity for reflective thought." Other speakers observed that the same was largely true in teaching the industrial subjects. This brought up in a very practical form the question of entrance requirements to colleges, secondary technical schools and normal schools.

THE HUMANISTIC ELEMENT IN INDUSTRIAL EDUCATION

ANOTHER thought drawn from experience in teaching the army men was, that just as the war aims courses proved to be a stimulating and directing force in the Section B work, so all vocational courses must have along with them studies with a human significance to rob them of a too narrow vision. "Otherwise a vocational course is a straight grind for technical efficiency." If a student in

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such a course sees merely the bread-and-butter value of his school work he is not going to be a good citizen. "If he sees the value to society it will take on an abiding interest." Men taking vocational courses should be initiated into the higher processes of human development.

"The country has made it manifest that it does appreciate the work of the soldiers; it must do the same for the industries," said Professor Selvidge. "I believe that it is a vastly bigger job to educate the public to appreciate the value of labor than to educate the laborer for his job. If you treat the laborer the way you treat the soldier you will be getting somewhere. Soldiers will dig ditches—do any common labor because they know that the country is behind them."

NOT DIFFICULT TO TEACH INDUSTRIAL PROCESSES

ONE of the features of the Terre Haute conference was the presentation of a list of conclusions by Professor R. W. Selvidge, drawn from his experiences as inspector of S. A. T. C. work in the Southern States. He divided the teaching of a trade into two parts: (1) the development of skill in manipulative processes; (2) the development of resourcefulness, or the ability to meet and master a new situation. He said that the time required to teach the first of these is much less than is generally supposed, provided it is done thru "carefully organized, systematic and intensive training." It is a "comparatively simple matter and consists largely of the repetition of a process until the habit is fixed." The second, however, which comes thru the "extending of experience over a wide variety of situations and developing the attitude of analysis toward a problem" is a relatively slow process which may be said to continue thru a lifetime. "It is in this phase of the training that our general education and experience counts for most." Professor Selvidge called attention to the fact that the division of labor in many trades is so complete that few journeymen know more than one or two of these divisions, and that men may be trained in these comparatively narrow lines in a remarkably short time. He believes that the best results can be obtained by concentrated effort day after day instead of a few hours each day or on alternate days. He placed the cost of teaching the manipulative processes of most trades as low as one hundred dollars and the time to be consumed not more than six months. These and similar statements called forth lively discussion as to what should be regarded as a trade, what related subjects should be taught along with the manipulative processes to develop resourcefulness, and the relation of such intensive teaching of manipulative trade processes to high school curricula.

TO EDUCATE AND TO TRAIN

IN these days when it is easiest, because so popular, to speak only of the vocational value of manual arts instruction, it is refreshing to hear such a clear note of appreciation of the general educational value of manual training as comes from a recent statement made by John W. Curtis, principal of the Isadore Newman Manual Training School, New Orleans, in setting forth the aims of that school. There is no hedging, no catering to the popular feeling of the moment, no hesitation in his statement. He speaks as one who fully believes what he says—one who knows thru experience. And he has had experience: as a country school teacher, as a high school teacher, as a superintendent of schools, as a supervisor of manual training, as a normal school teacher, as principal of a vocational school. Here is what he says:—

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There is no thought of changing the purpose for which the school was founded. It is not to become a vocational school. Our manual training is not to be emphasized for the purpose of developing technical skill for industrial service. It is a means to an end. Its purpose is to afford each pupil an opportunity to develop his powers and to enrich his experiences thereby enabling him to choose more wisely future courses of training for his life work. Of course, in many instances the training given here may yield earning power and some of the boys may become draftsmen instead of entering college for advanced instruction. Others may become artists or printers; but let me say again the primary object of the course is to educate and not to train for the industries.

WASHINGTON CORRESPONDENCE

MEMORABLE DAYS

Friday, November 8, and Monday, November 11, were memorable days in Washington. On Friday I chanced to be walking on G Street, near 12th, when the newsboys appeared shortly after one o'clock with the extra containing the premature announcement of Germany's surrender. Within a few minutes the music stores along that street had placed phonographs in their wide-open doorways, playing the Star Spangled Banner with the loudest needles procurable. Merchants bought copies of the paper and hung the front page, with its black headlines, in their windows like posters.

When I returned to the office everything was in confusion. A howling mob of employees was parading the long corridors of the Pension Building, singing, whistling, blowing horns, and beating on the bottoms of tin waste-paper baskets and wooden boxes in lieu of drums. A little after three o'clock word was passed around that the Department was closed for the day, by order of the Secretary. Instantly a rush was made for the doors, and the crowd departed, many literally on the run, to join the throngs reported to be gathering in front of the White House.

Less than ten minutes later a telephone message was received from the State Department, to the effect that the surrender report was unfounded, but the building was already deserted, and it was impossible to resume work. An important conference in the Commissioner's office detained me until nearly six o'clock, and by that time the great crowds had dispersed, but only to collect again later in the evening. The very air was electric with excitement, and the streets were choked with hilarious and good-naturedly disorderly crowds of people.

On Monday there was a somewhat less spontaneous, but not less enthusiastic and genuine demonstration, beginning in the early evening and lasting until after midnight. Enormous bonfires on the Ellipse, back of the White House, red fire torches everywhere, tin horns, rattles, bells, and improvised devices attached to the muffler exhausts of automobiles, all did what they could to advertize the fact that something had happened. Pennsylvania Avenue, from the Treasury to the Peace Monument at the foot of Capitol Hill, was one enormous mass of humanity, continually stirred by endless processions of automobiles, motor trucks, and street cars, loaded to the steps with vociferous revellers.

I could not help reflecting upon the terror that would be inspired by such a large mob when bent on mischief or revenge instead of a thanksgiving celebration.

COMMITTEE ON EDUCATION AND SPECIAL TRAINING

The signing of the armistice was for Washington not simply an event to be cele-

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brated with rejoicing and thanksgiving, however. It also became immediately a matter of enforced practical readjustment in many important particulars. Many readers of this MAGAZINE were vitally concerned to know what would be the effect on the work of the Students' Army Training Corps. Almost immediately telegrams began to pour into the office of the Committee on Education and Special Training of the War Department. Obviously the work of the committee could not be expected to continue beyond the end of the current school year, in any event, but it became known within a few days that the higher officials of the War Department were disposed to bring it to an end at the earliest practicable moment.

DEMOBILIZATION ORDER

The Committee promptly prepared, and submitted to the General Staff, plans for reorganizing the training units and continuing them in operation until June. After a number of conferences the General Staff announced that the whole project must be brought to an end at an early date. Indeed, some wag, who temporarily allowed his mind to wander from the seriousness of the situation, had already suggested that it might be appropriate to dub the S. A. T. C. the "Stick-Around-Till-Christmas" corps.

Plans were hastily revised, and on Tuesday evening, November 26th, telegrams were sent to all the institutions concerned, containing this brief announcement:

> Commanding officers of all units S. A. T. C., both Sections A and B, have been directed to demobilize and discharge the men, commencing week of December 1, with view to completion of discharges by December 21. Secretary of War has directed this Committee to arrange adjustments under contracts, concerning which you will be advised later. Letter follows.

It is well known that many of the men in training, especially in Section A, were not interested primarily in securing a college education (some were already graduates), but had left their businesses and professions to prepare for commissions in the army. With the obliteration of this prospect, they immediately lost interest in the training scheme, and were anxious to return to the duties of civil life at the earliest possible moment.

So far as the institutions are concerned, it is quite likely that they will be in no worse plight on January 1, as the result of this action, than they would have been under the operation of the selective service draft if the S. A. T. C. had not been set up. Some of them will undoubtedly be in better condition, for last September they were facing the almost certain necessity of closing their doors.

ENORMOUS EXPENSE

Furthermore, the War Department found itself legally unable to continue the expenditure of money appropriated for definite war purposes after the actual emergency had passed. Therefore, the use of this educational machinery, even during the period of demobilization, was necessarily cut off. And the saving effected by discontinuing this work will be no small item. While the actual figures have not, of course, been made public, the cost of maintaining these training units must have been in excess of $400,000 per day.

NEW IDEALS FOR THE COLLEGE

It is to be hoped that nothing will occur to prevent our educational system from permanently profiting by these experiences with the S. A. T. C. Individual university and college presidents have more than once during the past few months testified to the value of the transformations that have been wrought in their institutions. Institutions which have in the past limited their activities and interests to pretentious courses in engineering have seen a new vision.

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There should now be a concerted effort to realize this vision on a large scale.

Existing or former college courses need not be discontinued, but a permanent place should be made for suitable training for young men who, tho denied the privileges of good secondary schooling, have in them the qualities that make for usefulness and success. College faculties have found a new interest in working for these young men, and have marveled at their capacity and eagerness for learning. It is inconceivable that they will willingly return to pre-war conditions.

THE SURGEON GENERAL'S OFFICE

While the Committee on Education and Special Training concludes its labors, the educational work in the hospitals will necessarily continue for some months. With the cessation of the actual fighting it is possible to gage with more or less accuracy the magnitude of the job to be done.

TYPES OF CASES

With approximately 180,000 wounded, only about 20 per cent, or 36,000 cases, are serious enough to require extended hospital treatment. Of these, about 10,000, or a little more than one-fourth, are the dismemberment cases, and the wounded not involving dismemberment. These are assigned to the General Hospitals, of which there are seven. The remainder, consisting of the shell-shock victims, the insane, the tubercular, the blind, and others, are assigned to the Special Hospitals, of which there are twelve.

The work of the sub-division of education is carried on in both general and special hospitals. The educational and occupational activities include work, play, and study, in the hospital wards, as well as in special shops, classrooms, and out-of-doors on the hospital grounds, gardens, and farms.

LARGE STAFF NEEDED

A definite program of work has been established in 17 hospitals, and for its operation a staff of more than 500 persons is required. Of these, upwards of 300 are non-commissioned officers and privates, tho there are about 50 commissioned officers, as well as a number of civilians in administrative positions. There are about 130 women, serving as occupational aides.

The following list of registrations, effective November 15, shows the distribution by subjects in 17 hospitals. The list includes duplications, since many men are enrolled in more than one line of activity. I could not secure more definite figures for publication.

Bedside and ward handicrafts	990
Bedside and ward academic study	610
Shopwork, industrial arts, etc.	1,230
Agricultural work	1,000
Bookkeeping, stenography, etc.	920
Academic subjects	1,540
Curative games and exercises	1,310
Total	7,600

FEDERAL BOARD FOR VOCATIONAL EDUCATION

The past month has been a very busy one for the Federal Board for Vocational Education. A number of important investigations have been completed or are under way, and the reports are in preparation.

VOCATIONAL REHABILITATION

The Division of Vocational Rehabilitation, provided for by the Smith-Sears Act, has completed its organization, and is now in active operation. The chief of the Division is Dr. J. A. C. Chandler, superintendent of schools, Richmond, Va., and his staff includes: superintendent of training, Walter I. Hamilton, agent, State Board of Education, Boston, Mass., and more recently with the industrial education work

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of the Federal Board; superintendent of cooperation, Dr. H. L. Smith, dean of the college of education, Indiana State University; superintendent of case work, D. J. Richardson, attorney at law, Washington, D. C.; superintendent of records, J. H. Saunders, principal, Binford Junior High School, Richmond, Va.; superintendent of employment, H. L. Bronson, American Federation of Labor; field organizer, Dr. J. C. Miller, director of vocational education for the Province of Alberta, Canada; adviser to the Division, T. B. Kidner, of the Canadian Commission.

PLAN OF WORK

It is the purpose of the Division to interview every case of a soldier who is receiving disability compensation from the Bureau of War Risk Insurance, under Article 3 of the Act, and to show him specifically what the government can and will do to help set him on his feet again, economically and vocationally. It will thus be impossible in the future for any soldier or sailor, disabled in the line of duty, to say that no attempt was made to help him get a fresh start in civil life.

These men will naturally divide themselves into two main classes: (1) Those whose principal need is for assistance in finding suitable employment; and (2) Those who need some special training, and afterwards assistance in finding employment. Dr. Chandler tells me that in view of our known casualties, estimates based on the experience of other belligerent countries indicate that his Division will probably have to deal with not more than 15,000 cases of the first class, and not more than 6,000 of the second, or 21,000 in all. I hope to find space for a more complete story of this interesting work at a later date.

WHERE TO LOOK FOR STUDENTS

Mr. Holder, representative of labor on the Federal Board, called my attention yesterday to a circumstance that is of interest to superintendents and directors of industrial education about to organize classes.

In a certain city, not named, the school authorities proposed to organize a special class for the training of teachers for industrial schools. More than $200 were spent in advertizing in the local newspapers for skilled mechanics as students, but practically without results. Then someone suggested applying to the labor unions. This was done, and in a very short time there were more than three times as many applicants as could be accommodated. Mr. Holder's comment was:

> This only goes to emphasize one of the ways in which our people can be of real service to the schools if they will call upon us. Working people frequently do not take seriously the notices appearing in the "Want-Ad" columns, for they have been fooled often by "fake" advertizements. Neither do many of them read the trade journals; they cannot afford to. But they can always be reached promptly and effectively thru the labor unions and thru the labor union journals.

VOCATIONAL SCHOOLS FOR WORKERS IN COAL AND METAL MINES

Under this title Mr. Carris and Mr. Wright have just issued a preliminary report of an investigation in the field of trade and industrial education as it relates to coal and metal mining. During the summer a series of conferences of state directors of industrial education, state mine inspectors, and others, was held in the mining fields of Oklahoma, New Mexico, Colorado, Wyoming, and Montana. Visits were made to mines in the first three of these states.

The report has been prepared in mimeographed form and distributed to state di-

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rectors, and others especially interested, in order to make the information available at once, and in order to secure suggestions and criticisms before final publication. The report is now being used by a number of state directors of industrial education in co-operation with local mine officials and school authorities in setting up courses of study and organizing classes of miners.

Part 1 gives statistical information as to the importance of mining in the west central states; Part 2 includes brief reports of the conferences; Part 3 is an analysis of the working conditions and the types of occupations in coal and metal mines; and Part 4 presents the outlines of suggested courses of study for part-time and evening trade extension classes.

EVENING CLASSES FOR GOVERNMENT EMPLOYEES

The epidemic of influenza in Washington was the cause of serious delay in the collection and tabulation of returns from the questionnaire sent to all government employees by the Bureau of Education, acting for the inter-departmental committee which is interested in formulating some plan by which special evening classes may be organized here this winter. The signing of the armistice, and the consequent prospect of early radical curtailment of forces in many offices, have introduced further complications, so that at the time I write it is impossible to foresee what may become of the plan.

The returns from the questionnaire make a remarkable showing. More than 14,000 persons, from 32 different government Departments, Commissions, and Administrations, filled out schedules requesting opportunities for instruction, in more than 80 different subjects. Of these individuals, 8,260 are high school graduates; 3,264 are graduates of business schools; 2,154 are normal school graduates; 1,644 are graduates of college or university.

They came to Washington from every state in the Union, only eight states being represented by fewer than 30 individuals. Even far-off Arizona sent 18; Idaho, 14; Nevada, 18; Utah, 23; and so on.

Indicating the special type of work desired, 468 say they want to prepare to return to the work of teaching; 1,223 want work which may be counted toward college or university degrees.

Those of us who are interested in this project are hopeful that some plan may be evolved which will become a permanent part of the institutional life of Washington, exerting a real influence in raising the standards of efficiency, and at the same time making the government service more attractive by combining with it opportunities for education and research.

Think out new ways; think out new methods; think out new ways to deal with old problems. Don't always be thinking of getting back to where you were before the war. Get a real new world.

—David Lloyd George.

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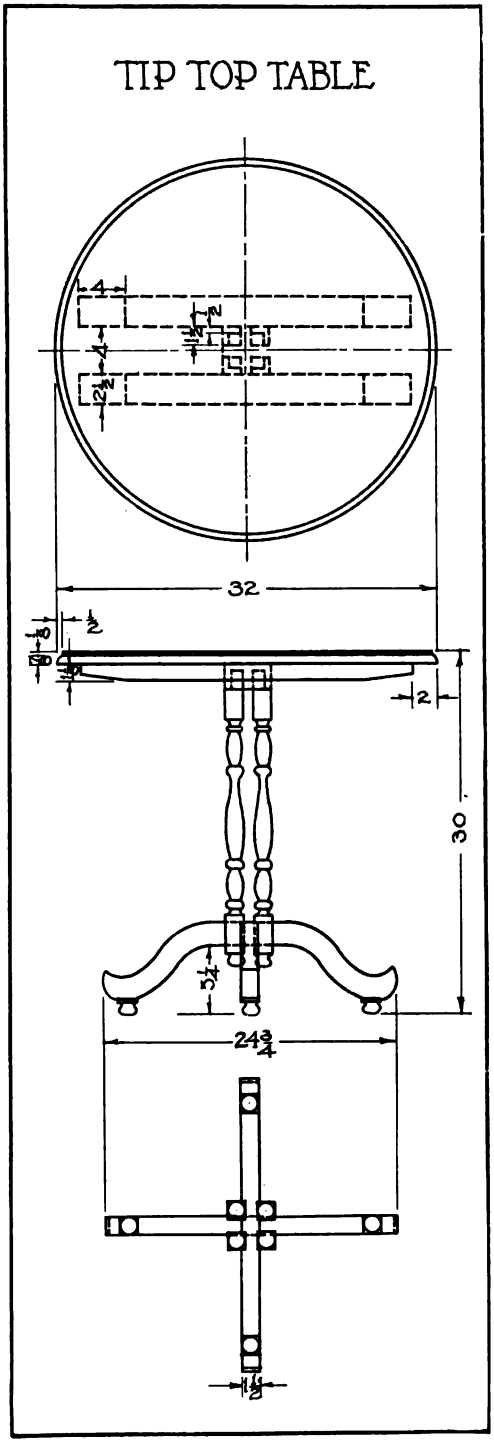
SHOP NOTES AND PROBLEMS

ALBERT F. SIEPERT, Editor

TIP-TOP TABLE

The design for this table was worked out by George Damann in the course in woodwork design at Bradley Institute. Later the table was made in the class in furniture construction. The novel feature of the design is the cluster of four spindles used as a pedestal. This proved to be especially pleasing. It can be made either as a tip-top or a solid top table. If the top is to tip, two hinges connect the square block above the spindles with the top.



THRESHING MACHINE

The wheels, boiler front, and smokestack of this toy threshing engine were turned on the lathe, but could be made with bench tools. The wheels were painted black, trimmed in red, together with the other wooden parts, and the tin boiler was left bright. The tin for the boiler came from a coffee can and the turned-over top edge was used at the rear end. The paper cover must be removed from the dry cell to allow it to fit inside the boiler; and since the frame of the engine serves as one conductor, it is necessary that the proper poles be connected with the poles of the battery, otherwise the battery will be short-circuited and run down.

—V. E. Sayre,
University of North Dakota.

TOWEL RACK

This rack has been used to dry dish towels for five years or more and is so satisfactory that it is worth copying. The reason for placing it over the register is obvious. Altho not shown in the drawing, a cellar door opens against it, but it is so thin that no inconvenience is caused by having the door open. The rack was designed expressly for the place it now occupies.

LIBRARY TABLE

The present day tendency in furniture manufacture is to get away from straight lines. For that reason we are often confronted with the problem of finding material for our advanced classes in woodworking. The library table here given is designed in the interesting William and Mary style, and gives a very neat looking piece of furniture when finished. The drawing for the table was made under Emil Johnson in his summer school class at Bradley Institute.

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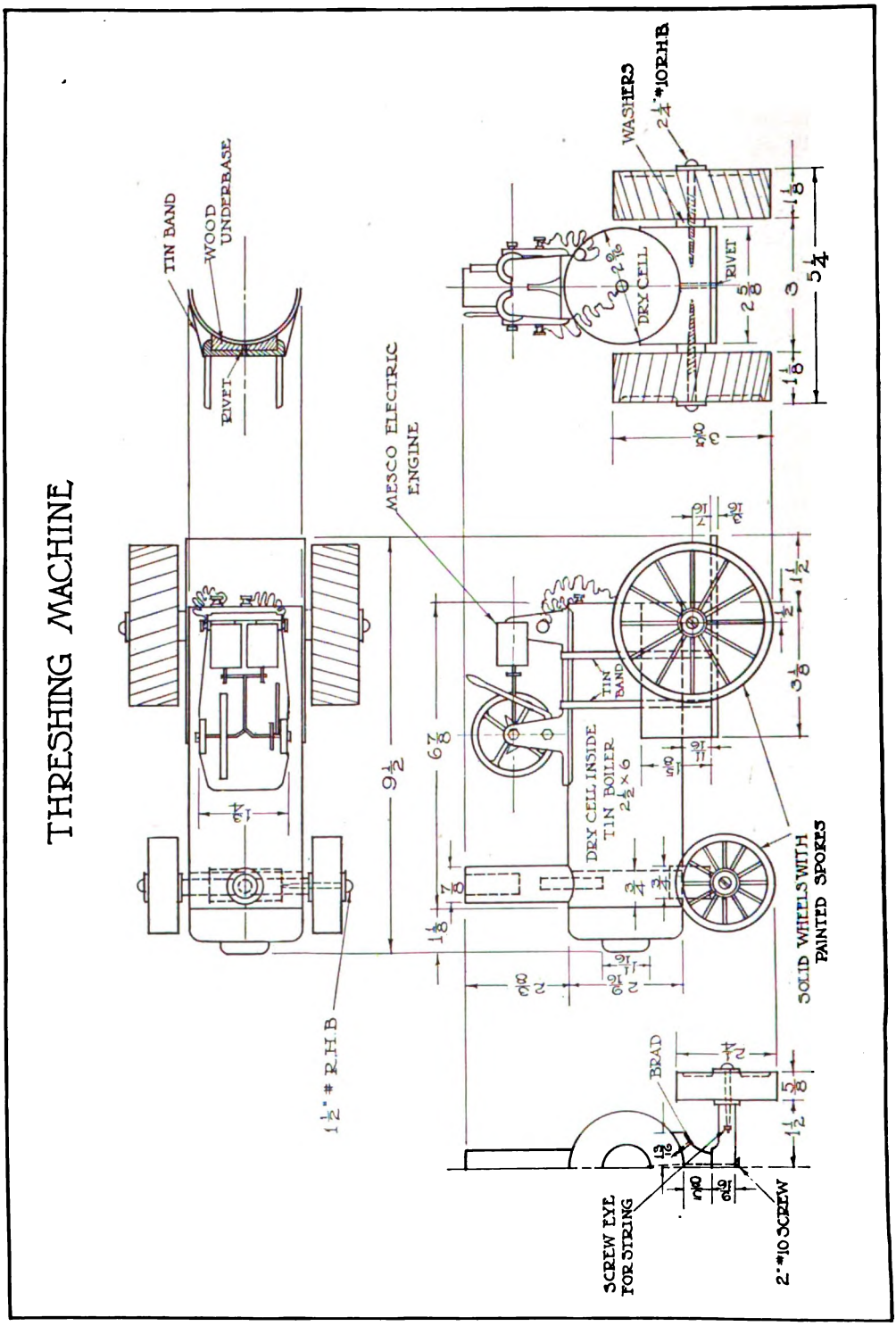
THRESHING MACHINE



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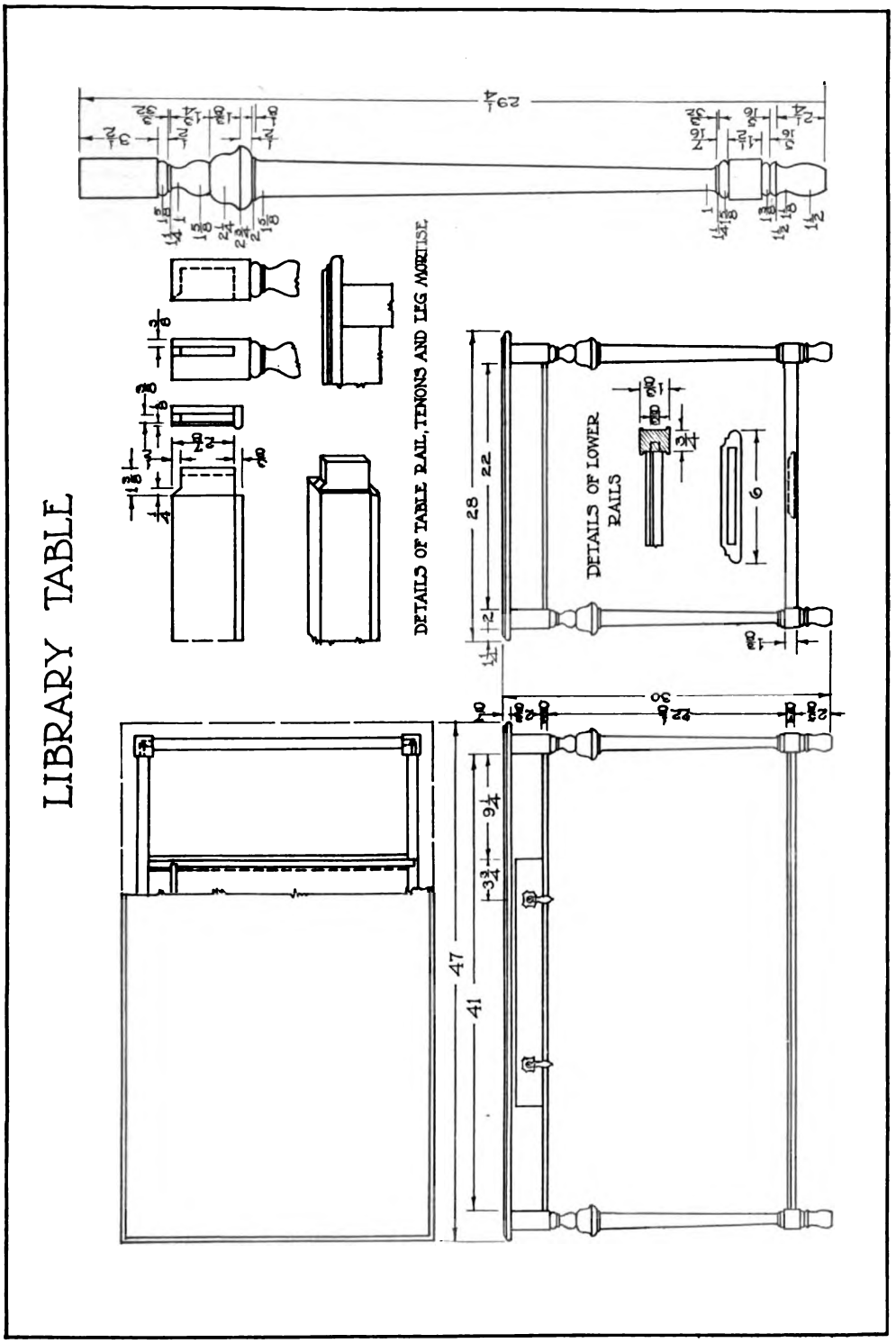

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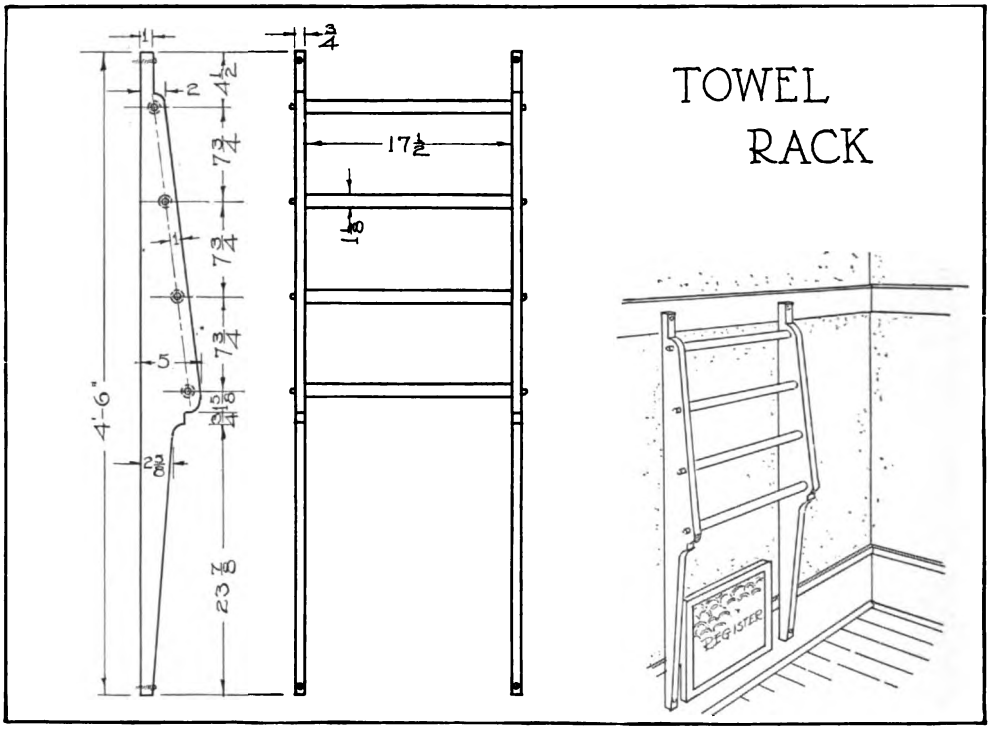

Walnut was used for the wood, but a good grade of mahogany ought to prove as well adapted for this particular design.

The legs were turned in one piece; however, great care was used to eliminate vibration. The table-leg mortise-and-tenon, as illustrated in the detail, gives a very satisfactory joint for all tables.

For a finish, the wood was filled with regular paste woodfiller, to which was added a little Vandyke brown and burnt umber, and a pinch of lampblack. Two coats of wax upon the filler gave a very pleasing result.

HORACE A. BOGGY,
Paola, Kansas.

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CURRENT PUBLICATIONS.

History of Labour in the United States by John R. Commons, with whom were associated David J. Sapass, Helen L. Summer, E. B. Mittelman, H. E. Hoagland, John B. Andrews and Selig Perlman. Published in two volumes by The Macmillan Company, New York, 1918. Size, 5¾x8¾ in.; 620 pages per volume; price, for set, $6.50.

The following is quoted from a six-page review which appeared in the August number of *The Quarterly Journal of Economics:*

"It is impossible in a review notice to do justice to the excellence of this two-volume study of the history of the labor movement in the United States. It is indeed a fitting conclusion to twelve years of research and compilation on the part of Professor Commons and his collaborators.

"These volumes, as well as that most valuable collection of sources, *Documentary History of American Industrial Society,* were made possible through the life-long sympathetic interest of Professor R. T. Ely in the history and problems of organized labor. In 1886, he stated in the preface of his *Labor Movement in America,* 'I offer this book merely as a sketch which will, I trust, some day be followed by a book worthy of the title *History of Labor in the New World.*' He never forgot that ideal, and about twenty years later was able to interest various persons who aided financially to such an extent that a staff of assistants, working under Professor Commons, was employed to comb the country for labor data and to write the finished story of the endeavors of the American workers to better their condition. A seminar in "Labor" was also organized at Wisconsin under Professor Commons, and graduate students made detailed studies of special phases of the labor movement, some of which have been published. . . . .

"Only those who have been in touch with the venture know the magnitude of the task. The scope of the field to be covered, the vast variety of problems to be studied and interpreted, the untangling of the threads of evidence and their proper piecing together, and, last but most important, the difficulty of collecting the data upon which the story was to be based, were but a few of the obstacles to be overcome. Thruout all the years of research and writing, the work has gone on under the immediate supervision of Professor Commons. . . . .

"This study is unquestionably the greatest contribution thus far made to our literature dealing with the labor field in the United States."

An Outline of Courses in Industrial Arts, by Henry Giese and C. E. Partch. Published by Department of Engineering Extension, Iowa State College, Ames, Iowa, 1918. Size, 5¾x 8½; 87 pp.; paper covers; price, 40 cents.

This is an outline of the courses in industrial arts given in the Iowa State College summer session of 1918. In general, the outline is divided into three parts as follows: (1) A brief description of the courses offered, telling the scope of each; (2) programs of courses, giving lecture titles and type of shop work given; (3) a complete outline of the courses, giving an outline of all lectures given, an outline of the shop work for each group, showing the underlying principles and suggested projects for emphasizing the same, and an account of further work done by members of the class, including research work on topics of particular interest to the individual or suggested methods of making the work more vital to the life of the boy.

The needs of the rural teacher have been kept in mind, two classes of projects being given for each grade, thus showing the application of the course to farm woodwork as well as to cabinet making. The outline also contains references to sources of valuable material. For those desiring such material, the outline answers the request for a brief course of study in manual training; however, it "has not gone to the extreme of the abstract Russian joint system, making the work almost purely mechanical, nor to the extreme of the so-called individual project method, sacrificing what value there was in maintaining a high standard of skill, but has rather combined the two. The grades have been classified according to definite underlying principles rather than by specific projects."

Yarn and Cloth Making—An Economic Study, by Mary Lois Kissel. Published by The Macmillan Company, New York, N. Y., 1918. Size, 5x7½ in.; 252 pages.

It is seldom that one finds a subject so exhaustively treated, and at the same time having such a widespread appeal. This book is a college and normal school text to be used as a

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preliminary to fabric study; it is also a reference book for teachers of industrial history and art in secondary and elementary schools. In addition, the subject-matter covers such a wide scope and is so well organized that the general anthropologist, the industrial museum official, the textile librarian, and the textile mechanic will find in it a wealth of related textile facts and data.

In brief, the book carries spinning and weaving from their crude beginnings into the machine processes, with a focus upon the economic gain achieved as spindle and loom became more efficient in producing improved yarn and cloth. The author has aimed to make a more discriminating consumer of fabrics.

RECEIVED

Dill's Style-Book of Printing. For sale by The Inland Printer Co., Chicago. A book of rules for plain composition, compounding, punctuation, capitalization, abbreviations, numerals, tabular matter and general make-up, used in the school for printers at Mooseheart, Ill. Adopted by International Association of Teachers of Printing for use in all their classes. Vest pocket size. Price, 50 cents.

Making American Industry Safe for Democracy. By Ruth Mary Weeks. Bulletin No. 5. Published by Vocational Education Association of the Middle West. A plea for general trade instruction which shall give the pupil an all-around understanding of all the processes of a trade in order that he may become an intelligent worker, rather than a highly skilled workman in one of the trade processes. Price, 10 cents.

How to Start a Training Department in a Factory. Bulletin upon Training and Dilution, No. 1. Published by U. S. Department of Labor. Gives in concrete form the detailed experience of one representative firm. The methods and processes described are flexible enough in character to permit of easy adaptation to the majority of industries.

Trade and Industrial Education. Bulletin No. 17. Issued by Federal Board for Vocational Education. Discusses the organization and administration of trade and industrial schools and classes under the Federal law.

Part-Time, Trade and Industrial Education. Bulletin No. 19. Issued by Federal Board for Vocational Education. Discusses this subject from every angle, giving history of the movement in this country and legislation on the subject. European schools compared with similar ones in our own country. Pamphlet is of special interest to everyone directing education.

The Home Project as a Phase of Vocational Agricultural Education. Bulletin No. 21. Issued by Federal Board for Vocational Education. Supplies information and suggestions concerning the nature and conduct of home project work. Economical development emphasized as a final goal.

Vocational Guidance in Secondary Education. Bulletin No. 19, 1918. Published by U. S. Bureau of Education. Outlines a comprehensive plan for vocational guidance as an integral part of secondary education, and indicates the responsibility of the secondary school for the vocational adjustment of all pupils of secondary school age, whether in school or at work.

The Round Barn. Circular No. 230 (Revision of Bulletin No. 143). Published by University of Illinois Agricultural Experiment Station. Presents advantages and disadvantages, arrangement, and details of construction of a round barn.

Junior Red Cross Activities. A Teacher's Manual. Supplement No. 1. Manual Training Instruction. Contains working drawings and bills of materials for 73 articles made in manual training shops during the war for the American Red Cross.

Eighteenth Annual Report of the Director of Education in the Philippines Islands, 1918. The development of educational work in the Philippines is well brought out in the illustrations alone.

Nineteenth Annual Report of the Superintendent of Schools of New York City, 1916-1917. A reprint of the reports of the respective supervisors of art in high schools, drawing in elementary schools, and shopwork in elementary schools.

The Teaching of Children Mentally Three Years or More Below the Normal. Issued by the State Department of Public Instruction, Trenton, N. J. A pamphlet containing discussions by experts of various phases of the problem; contains a bibliography of practical helps for teachers of special classes.

Projects in Farm Mechanics, by E. A. Funkhouser. A bulletin of John Tarleton Agricultural College, Stephenville, Texas. Contains twenty plates. Copy sent on request.

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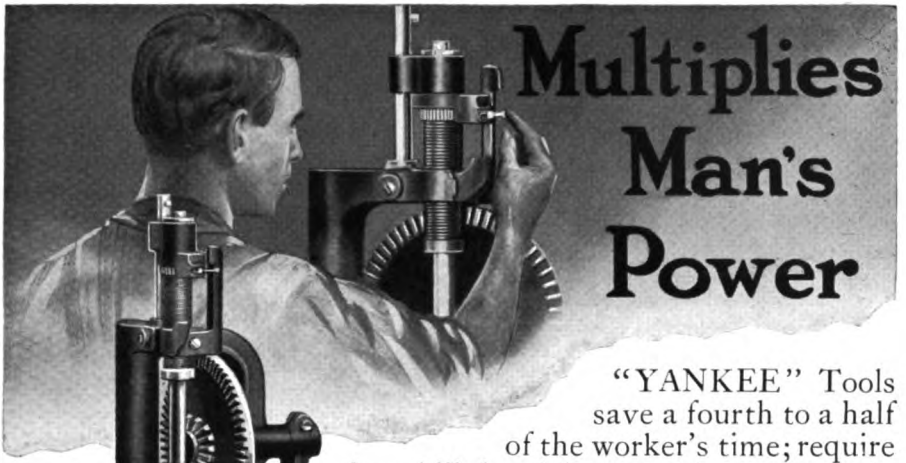

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practice and tool making, shop mathematics, mechanical drawing and blueprint reading. Classes run from 3:00 P. M. until 11:00 P. M. in two or four hour periods and for five days a week. Beginning Monday, December 2, regular night school classes will be opened in the foregoing subjects and in woodworking, cabinet making, furniture design and construction, wood turning and pattern making, and a number of commercial subjects. These will be open to the public in general. Any group of fifteen will be given the work they desire.

On Monday, November 25, the Minneapolis public schools gas tractor school was reopened at Central High in answer to the demand from the tractor manufacturers who desire that this work shall be continued in this school. They will send their students for instruction as before. The high school boys' class has already begun work. The boys are carefully selected and are over sixteen. Fully half of them are from the other high schools of the city. A gas tractor course will be started in the night school also.

One of the most progressive departures of Central is the shop foremans' efficiency class in the night high school. One hundred and fifty shop foremen and shop superintendents of the Minneapolis Steel & Machinery Co. are enrolled. The company gives them two hours time off to attend the class. The glass is divided into sections which meet the same day. Mr. Newcome, an efficiency expert and for many years a teacher of this course, is the instructor. One section, under the supervision of H. G. Funcett, supervisor of drawing and technical subjects at Central high, meets in the Odd Fellows hall on Lake street, which has been rented for this purpose. H. M. Brook is principal of the night school and supervisor of shop work at Central High.

The United States Government will reorganize the buildings at Fort Snelling to accomodate the hospital reconstruction work that they plan to do there. Major Schuyler A. Clark, commandant, is very much interested in the rehabilitation of the soldiers that he expects to have sent to him—probably more than a thousand. He has made all plans for hospital vocational training as an aid to their physical rehabilitation and to start the real vocational training which will be carried on by the Federal Board for Vocational Education. About five hundred men are already at the post.

Governor Burnquist and the state department of education are cooperating with the work of the local district vocational office. The Minneapolis Division of Women's Naval Service Inc., under the direction of Mrs. W. H. Backus, chairman for Minnesota, has registered fifty women to give handicraft training in reconstruction hospitals. Classes in training for this work are being conducted at 712 Builders Exchange, Minneapolis. Two blind instructors are employed in this school. A nominal fee is charged for this training.

Governor Burnquist has appointed a commission on rehabilitation of industrial cripples. O. M. Sullivan, chief statistician of the state department, is chairman; other members are E. M. Phillips, state high school inspector and director of vocational education under the Smith-Hughes law; Dr. A. J. Gillette, nationally known as a specialist in children's deformities; Frank Pampush, Frank Lilygen, A. G. Bainbridge, and John O'Donnell.

Minneapolis Central has organized part-time work under the supervision of H. G. Funcett. Sixteen boys take the place of eight men in the Minneapolis Steel & Machinery Shops. One boy works in the morning while the other goes to school in the afternoon; they change about. School hours are arranged so that the boy does not lose any time. The boy goes to school in the morning from 7 o'clock until 11:30 A. M.; in the afternoon he works from 12 M. until 4:30 P. M. The work in the shop is credited to the boys on their technical course in school as advanced machine shop practice and is supervised carefully to see that the boy is not exploited by the company. The idea as explained by Mr. Zuppann, director of technical courses "is to give the boy a toe hold in industry" before he graduates from high school. In addition to this class, arrangements are being perfected to place boys with the Telephone Company and the Northern Fire Apparatus Company. The boys receive 15 cents an hour for the full day covering both the time in the shop and school. This is a standard beginning wage, and as the boy's worth increases the wage will increase. The technical course has now grown to the fourth year and the

(Continued on p. XV.)

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FIELD NOTES

(Continued from p. XIV.)

gas engine class is being organized. H. G. Funcett is in charge. This is a general course in gas engines, dealing with principles, with enough practice to illustrate. The course leads into automobile work.

The school placement department of the Minneapolis schools is negotiating with the Federal Employment Bureaus office in Minneapolis to see if the two may cooperate in the placement in their first jobs of pupils who leave school. Formerly this work has been exclusively handled by the vocational department.

The curtailment of the war-training plans of the nation has taken the Army training away from Dunwoody. The Naval training will continue until the end of the contract, some time in the late Spring. H. W. Kavel, director, reminds us that any school desiring educational films of industrial subjects may get them through Dunwoody as usual. All the civilian activities have been going on as usual, but now it is expected to stimulate this work and put new life into it. Dunwoody has trained nearly 3000 navy men, 2200 army men, 150 student flight officers for the navy and several special groups for the army, cooks, bakers, radio, telegraph and telephone men. Seven thousand men in all. A new department is being added to the regular work. Commercial photography has been demanded and Dunwoody has responded.

J. E. Painter, supervisor of the manual training department of the Minneapolis schools, reports that his department has made 3,000 doz. splints in grade school shops, with 12,000 doz. still to make, and 1,500 bedside tables in the high school shops, also at the Franklin Junior High twenty special collection stands for the Belgian relief committee have been made and twelve more are in process. In addition to this Red Cross work they are making literature holders for the National Tuberculosis Committee and are painting 300 tin cans for the Red Cross to use as flower vases in the hospitals.

The question of the all-year school program is being very carefully considered in Minneapolis now. The parents' and teachers' associations are studying it and a committee of the board of education has gone to Newark, New Jersey, to see the operation there. Superintendent Jackson, and Messrs. Purdy, Deutch, Thompson, and Leighton of the Board of Education are the committee.

—J. L. PEMBERTON.

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(Continued on p. XVI.)

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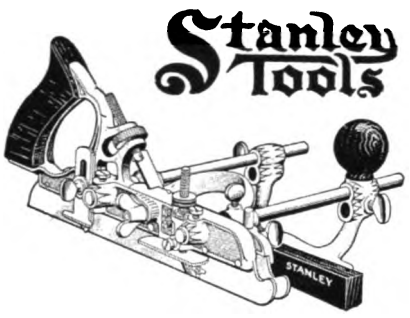

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FIELD NOTES

(Continued from p. XV.)

NEWS ITEMS FROM THE SOUTHWEST

I. Calodny, state director for vocational education in Arizona, says, "the Smith-Hughes Act has centered attention upon industrial education throughout Arizona." Mr. Calodny believes that in communities where the percentage of Mexican population is high, the vocational work is going to be of the greatest importance. It will be the one means that will keep the Mexican boys and girls in school, and in time will convert unskilled laborers into respectable craftsmen.

In Douglas, a class in building repair work has been started for Mexican boys. These boys, twenty in number, under the supervision of a teacher who has had considerable trade experience, have thus far renovated three school buildings. Their work on these buildings consisted of the repairing of floors and roofs, painting outside and varnishing inside, repairing and varnishing desks, repairing cement work and electric wiring. Some of this work was carried on during the summer months, and is being continued with practical training in the building trades. It is hoped thru this training to place these boys in a position to command the wages of a tradesman rather than the small wages now paid to unskilled Mexican laborers. Superintendent Steele has under way plans for work in the high school that will be closely correlated with the demands of the big smelters located in that city. This work will probably consist of courses in assaying and in mineralogy.

Globe, last year, organized and carried on courses in assaying and mineralogy in the high school for boys who wished to prepare for positions as assayers in the mines.

At Winslow, a railroad town, part-time classes are organized in conjunction with the Santa Fe railroad shops. The work of these classes will be trade extension and general continuation courses for the employees of these shops.

Vocational courses in carpentry and joinery have been organized in a number of the schools of the state, including Tucson, Bisbee, Prescott, Globe, Miami, Phoenix, Benson, Winslow and Mesa. Automobile repair work is being taught at Bisbee and Phoenix. At Phoenix, in addition to the school shop, three local garages have been utilized for purposes of instruction. Vocational

(Continued on p. XVII.)

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FIELD NOTES

(Continued from p. XVI.)

printing is taught at Bisbee. Drafting is taught at Winslow, Globe and Phoenix. Classes in telegraphy, Morse and wireless, are conducted at Winslow and Phoenix.

W. A. BURK,
Supervisor of Industrial Education,
El Paso, Texas.

THE MANUAL ARTS CONFERENCE

The conference of men in the Mississippi Valley interested in the training of teachers of manual arts and vocational subjects was held at the State Normal School and the Hotel Deming, Terre Haute, Ind., on the 5th, 6th and 7th of December. Professor M. L. Laubach was the host on this occasion. This Conference is an annual event conducted by the U. S. Bureau of Education, and is looked upon as one of the choicest of the year by the men who attend.

The custom of the Conference is to take one topic only at each session and have it adequately presented and fully discused before adjournment. This year the topics were (1) "The War Aims Course in the Vocational Section, S. A. T. C." by F. S. Bogardus, of the State Normal School, Terre Haute; (2) "Report of Committee on Practice Teaching" by Albert F. Siepert, Bradley Polytechnic Institute, and F. C. Whitcomb, of Miami University; (3) "Development of Teacher Training Courses in Trades and Industries" by K. G. Smith, agent for Industrial Education, Federal Board for Vocational Education, Indianapolis; (4) "Industrial Arts in Secondary Schools in the War Emergency" by W. T. Bawden, U. S. Bureau of Education, Washington, D. C.; (5) "Report of Committee on Examination and Certification of Teachers," by A. B. Mays, Sam Houston Normal Institute, Huntsville, Texas; (6) "Some Lessons from the Army Training Schools" by R. W. Selvidge, district educational director, Committee on Education and Special Training, War Department; (7) "How Mechanics are to be Inducted into the Work of Teaching" by I. S. Griffith of the University of Missouri and G. F. Buxton of the University of Indiana.

At the close of the Conference a resolution was passed commending the action of the U. S. Commissioner of Education in calling the Con-

(Continued on p. XVIII.)

Wiley Books

Arithmetic for Carpenters and Builders

By R. Burdette Dale, B. M. E., M. E., formerly Assistant Professor in Charge of Vocational Courses in Engineering and Correspondence Instruction, Engineering Extension, Iowa State College.

A text for vocational and industrial schools, trade schools, manual training schools and night schools. It presents the subject of arithmetic as used in the daily work of the carpenter and builder, in a simple form.

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Drawing for Builders

A Problem Course in Architectural Drawing. By R. Burdette Dale, B.M.E., M.E.

Especially useful to the practical builder and to the ambitious young man who wishes to become an architect's draftsman. Not only teaches the student to make drawings, but instructs him to read and use them.

v+166 pages. 8 by 10¾. 69 figures, 50 plates. Cloth, $1.50 net.

Mathematics for Machinists

By R. W. Burnham, M. A., Instructor, Evening Machine Classes, Pratt Institute, Brooklyn, N.Y.

Beginning with fractions, this book gives, in elementary form, an explanation of the calculations most frequently occurring in machine-shop work. The steps in a calculation are shown in logical order. For day trade, continuation, and cooperative classes.

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FIELD NOTES

(Continued from p. XVII.)

ference in Washington last May which resulted in the circular (Secondary School Circular, No. 4) on "Industrial Arts in Secondary Schools in the War Emergency" issued by the Bureau of Education and suggesting that, using this circular as a basis, illustrated outlines of courses and recommendations as to equipment and organization be prepared and distributed by the Bureau of Education to assist high schools thruout the country during the reconstruction period.

Thru Dr. William T. Bawden, chairman of the Conference, it was voted to ask the Commissioner of Education to hold a similar conference next year. Upon the invitation of Prof. D. J. MacDonald, it was recommended that the next conference be held at the University of Cincinnati.

INTEREST IN PRINTING RAPIDLY DEVELOPING

At the convention of the International Association of Teachers of Printing, held in Newark, N. J., last March, a new method for teaching typesetting was presented which is said to mark a decided advance over the method of instruction now followed in the average school print shop. The system originated with Harry W. Osgood, printing instructor at Public School No. 24, Jersey City, N. J. The Osgood system reduces individual instruction to a minimum. The details of the system, together with articles on other phases of printing, are being presented thru a series of bulletins issued by the Printing Teachers Cooperative Bureau, 444 West 57th Street, New York City.

The School for Printers' Apprentices has opened its doors in New York for the fall term with fine prospects. The war has not diminished interest in the courses offered, which have been considerably enlarged in scope. The staff of instructors has been increased also. This is the seventh year of the school, which is managed jointly by Typographical Union No. 6 and a group of employing printers, and last year had 400 students. The course of study includes practical work in type composition, advertising and layouts, with educational courses in grammar, punctuation and proof reading.

(Continued on p. XIX.)

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FIELD NOTES

(Continued from p. XVIII.)

The printing department of the Holyoke Vocational School, Holyoke, Mass., has recently put out a poster to be distributed to postmasters in the northwestern rural towns of the state for display upon farms left idle through the working of the draft or the enlistment of the men who work them. The poster is 11 x 14, with an American flag at the top and reads:

"This farm is unoccupied because a man went from here to serve our country. If you are a loyal American you will consider these premises and everything upon them under the protection of the Flag."

The employing printers of Providence, R. I., have shown a fine spirit of cooperation in connection with the introduction of printing in the Providence Trade School, by loaning the school a complete job printing outfit, including type, etc., valued at $1,000. A committee, of which Howard Knight, president of the Master Printers' Association of Rhode Island, was a member, visited Wentworth Institute, Boston, and then recommended the local cooperation.

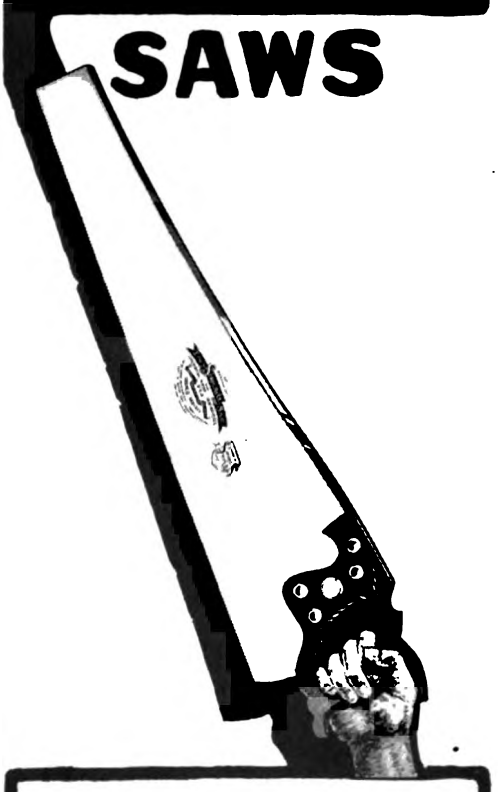
A printing equipment has been installed at the State Normal School, Winona, Minn., consisting of a hand lever press, 10″x15″ Chandler & Price press, 25″ paper cutter, perforator, stitching machine, and a suitable assortment of type and cases. The ninth grade boys in the junior high school are given printing. A school paper is to be started soon. J. H. Sandt has charge of the work.

A new vocational high school has been completed recently in Waterbury, Conn., at a cost of $700,000. Harrison S. Allen, vice-principal of the local high school, has been appointed principal of the new school. Mr. Allen is a graduate of Colby and Tufts Colleges, where he received his A. B. and M. A. degrees, respectively. He is a member of the New England Association of Physics Teachers, the American Association for the Advancement of Science, and the American Microscopical Society. Courses in woodworking, forging, machine shop practice, cabinet making, pattern making, and printing will be offered.

This year the Visual Instruction Service Section of the Department of Engineering Extension

(Continued on p. XX.)

SIMONDS SAWS



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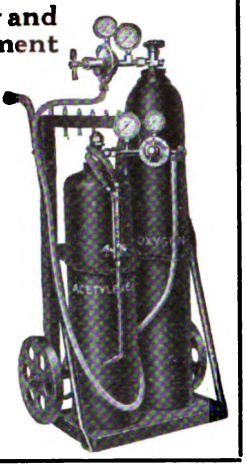

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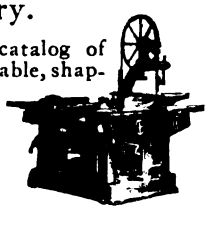

The Crescent Machine Co.
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FIELD NOTES

(Continued from p. XIX.)

of the Iowa State College at Ames, Iowa, is providing twenty-four motion picture programs. These are well selected, and are of great value in teaching industrial processes and industrial geography. These are available for schools in the state. Films are not sent outside the state except in case owners of industrial films request that shipment be made beyond the limits of the state. This department also furnishes a large assortment of lantern slides and charts. Just now the equipment of such slides is being enlarged. Slides on eight subjects are announced to be ready, January 1, 1919.

To induce the new Americans in Pittsburg to learn English and to give other citizens who are at work during the day an opportunity to receive vocational training and also to get practical instruction in a variety of studies, the board of education has opened six evening high schools and 22 elementary schools for their accommodation.

The American Junior Red Cross of the Southwestern division was asked to supply the army with 30,000 splints, 1,000 bed-side tables and 500 kitchen utensil chests by Nov. 15. The articles were to be made in the manual training departments of the schools of Missouri, Arkansas, Texas, Oklahoma and Kansas. In addition to these articles, furnishings for convalescent hospitals were also requested.

Another school soon to undertake the training of men and women for positions as instructors in industrial plants, is the Springfield Vocational School, Springfield, Mass. George A. Burridge, acting principal of the school, has been interesting the local manufacturers in the movement, pointing out the success that has attended the movement in Worcester and Boston.

The manual training work in the high school at South St. Paul, Minnesota, is gradually taking the form of a trade school, and the work in the grades is made to bear directly on this aim. The high school manual training is limited to architectural drawing and practical carpentry. The work for the present year is the building of a bungalow of five rooms and bath. The owner pays for all the building material and the

(Continued on p. XXI.)

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FIELD NOTES

(Continued from p. XX.)

students' pay is the experience gained. Harry A. Vestal is the supervisor of manual training.

Dr. Payson Smith, state commissioner of education in Massachusetts, will ask the Legislature next year to make mandatory the law that now permits cities to maintain vocational schools. He will do this for the protection of boys and girls between the ages of 14 and 16 years who, under stress of war emergency, have left school and gone to work.

A revision of the course of study in the manual training high school, Brooklyn, has been recommended by the board of superintendents and approved by the members of the board of education. It provides a uniform course of two years, to be followed by elective courses of two years each in the following branches: Technical college preparatory, architectural and building, chemical, electrical, mechanical, structural.

Thru the cooperation and active assistance of thirteen manufacturing and industrial plants in Saginaw, Mich., a cooperative apprenticeship course has been introduced in the Arthur Hill Trade School of that city. The course covers three years, at the end of which time the companies agree to pay bonuses of $100 to all boys who graduate. The plans were worked out by Principal Charles A. Hach with representatives of the interested companies.

The Federal Board for Vocational Training has arranged to pay all disabled soldiers, sailors and marines $65 a month during the period of vocational training, with proportionately more for those who are married and have children. Up to November 9, the summary showed a total of 5584 cases in which such training would be needed.

A school in which free training will be given to persons who are capable and willing to give their services in re-educating returned wounded soldiers, was opened in Pittsburg early in December. Dr. Winifred Sackville Stoner, who has had two years' experience in this work in Canada, will direct this training.

For two months preceding the ceasing of hostilities, Arthur F. Payne, associate superintendent

(Continued on p. XXII.)

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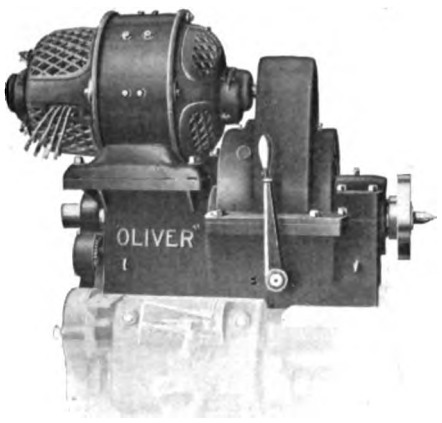

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FIELD NOTES

(Continued from p. XXI.)

of schools and director of vocational education, Johnstown, Pa., was engaged by the War Department to recruit workers for the Ordnance factories in the Philadelphia district. During this period, training departments were organized in 64 factories under Mr. Payne's direction. In addition, 50 additional factories and 18 schools were surveyed.

The Brooklyn Free School of Marine Engineering at Pratt Institute is training officers for the new Merchant Marine. This opens opportunities to a large number of men to qualify for positions that are quite remunerative. Professor J. P. Kottcamp, head of the department of mechanical laboratories at Pratt, has charge of the work.

The high school of commerce in Omaha, Neb., will soon be the proud owner of a woodworking shop which was built by the students. It is built of old lumber salvaged from the Park School. Robert Gault, who learned his trade in Edinburgh, Scotland, and who constructed three Carnegie libraries before coming to Omaha, is the instructor.

Everyone interested in after-the-war work of the schools of the Middle West will plan to attend the Chicago meeting of the Vocational Education Association on January 16, 17 and 18. Detailed information can be secured from Secretary L. W. Wahlstrom, Francis Parker School, Chicago.

The Ohio Industrial Arts Association will hold its annual meeting at Columbus, Ohio, February 7-8, 1919. A large attendance is anticipated because of the unusual importance of this work during the reconstruction period.

The Council of the Western Drawing and Manual Training Association has decided to hold the next annual meeting of the Association at the Chicago Art Institute, May 6-9, inclusive. Additional information will be furnished later. L. R. Abbott, Grand Rapids, Mich., is secretary.

A foremanship school for the yards of the Chester Shipbuilding Company, Philadelphia, has been organized with an initial enrollment of 200 men, composing the present foremen in the ship yards.

(Continued on p. XXIII.)

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FEBRUARY OPPORTUNITIES!

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SPECIALISTS' EDUCATIONAL BUREAU 816-18 Nicholas Bldg. St. Louis, Mo.

FIELD NOTES

(Continued from p. XXII.)

E. G. Limprecht, supervisor of manual training at Bisbee, Arizona, has been granted a year's leave of absence to become instructor of machine design in West Virginia University, and will have charge of the drafted men who are doing vocational work.

Eugene C. Graham, formerly director of industrial arts, Evansville, Indiana, who has been with the Federal Board since July 10, is now in the Atlanta district working with the rehabilitation division as placement officer.

Miss Anna M. Cowlin, who was formerly supervisor of drawing in Chester, Mass., has been appointed supervisor of manual training in the junior high school at Chelsea.

Miss Maude Goldsmith, formerly of El Paso, Texas, is now teacher of woodworking and supervisor of primary handwork in the public schools of Venice, California.

Professor Frederick H. Evans, of Toledo University, is now working under the Committee on Education and Special Training with headquarters in Washington. He has been called to do work as "test expert" in gunsmithing.

Dr. Arthur D. Dean, of Teachers College, Columbia University, has been given the rank of Major in the Surgeon General's Office, and is to have charge of the courses at Columbia for the training of teachers for service in the military reconstruction hospitals.

J. D. Elliff, state director of vocational work in Missouri, is organizing teacher-training work in St. Louis and Kansas City. Associated with him in this work is Professor Ira S. Griffith.

William R. McIntosh has been appointed acting director of the New Bedford Vocational School, New Bedford, Mass., succeeding Arthur S. Allen. Mr. McIntosh had been head of the electrical department of the school for the past year and a half.

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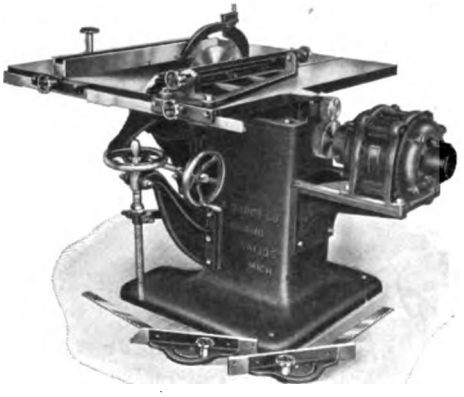

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There are in every class some real mechanical geniuses. They are the boys who will, if properly directed, become industrial leaders. They need to be kept busy up to their full capacity with worth while work. The book provides for them.

3. The **inattentive boy, the slow boy** and **the absentee will give the teacher** who uses this book **little trouble** and the boys will be grateful for its help.

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TRADE NOTES

A copy of a new type showing has just been published by the American Type Founders Company, Jersey City. It is designated as Century Schoolbook type, and is based on the result of scientific investigation concerning the best design of letters for textbook and school print-shop use. Every detail has been considered in the making of these types, the spaces between letters, the height of each letter, the weight of each thick and thin line, and the white spaces within each letter (counters), have been exactly determined by micrometer measurements from experimental data. A circular illustrating this new type in different points will be sent upon request.

Joseph Dixon Crucible Co., Jersey City, desire that all the readers of this magazine become acquainted with their line of "Best" colored crayon pencils. They are recommended for business use where a bold smooth marker is desired, as well as for artists' use. Full particulars will be furnished upon request.

The possibilities of oxy-acetylene welding and cutting in connection with the repair of machinery has proven its worth as a school subject, and the cooperation of manufacturers of this special equipment has been very helpful in introducing the subject in the schools. Last spring the Imperial Brass Mfg. Co., Chicago, furnished the welding and cutting apparatus, welding torches, gas, specimens for work, instruction charts and lessons for an intensive training course at Lewis Institute.

Books for the special needs of those pursuing trade courses are rapidly coming along. In this issue John Wiley & Sons announce three such books, two for carpenters and builders, and one for machinists. Special circulars and the privilege of examination are offered to those interested.

Greenfield Tap & Die Corporation, Greenfield, Mass., have just issued Catalog No. 40 which covers their small tools, including taps, dies, screw plates, and reamers. Their other lines of manufacture, namely, pipe tools, machine tools, and gages, are taken care of in separate catalogs. It is interesting to note that the present catalog supersedes all others formerly issued under the names of the following constituent companies of this corporation: Wells Brothers Company, Wiley & Russell Mfg. Co., F. E. Wells & Son Co., and A. J. Smart Mfg. Co.

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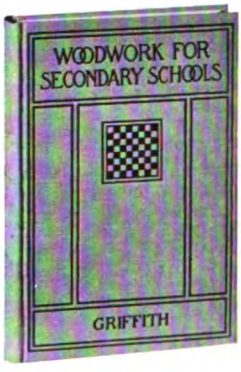

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CANE YOUR OWN FURNITURE—"Seat Weaving" by Perry tells how to cane chairs, how to reseat a chair, how to use cane webbing, how to do rush seating, how to do reed and splint weaving, how to stain, how to finish and refinish, how to prepare raw materials, how to do bleaching. Thoroly practical. Every teacher of furniture making should have this book. Price, $1.00. The Manual Arts Press, Peoria, Illinois.

ALPHABET FOR LETTERING—In the grades that grade pupils can make and high school pupils need not unlearn. Twenty-page booklet, 25 cents. Milton Clauser, Estes Park, Colorado.

EVERY TEACHER interested in the greatest present problems affecting the manual arts in education should read "THE MANUAL ARTS," by the editor of this Magazine. Prof. Charles A. Bennett. Price, postpaid, $1.00. The Manual Arts Press, Peoria, Illinois.

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MANUAL TRAINING TOYS, by Moore, tells how to make darts, buzzers, tops, guns, whistles, bow and arrows, swords, boxes, telephone, windmills, kites, waterwheels, water motors, pumps, boat, pile driver, kite string reel, cannon, etc. It is full of fun for the boy in his own shop and will add new interest in the school shop. Price $1.00. The Manual Arts Press, Peoria, Illinois.

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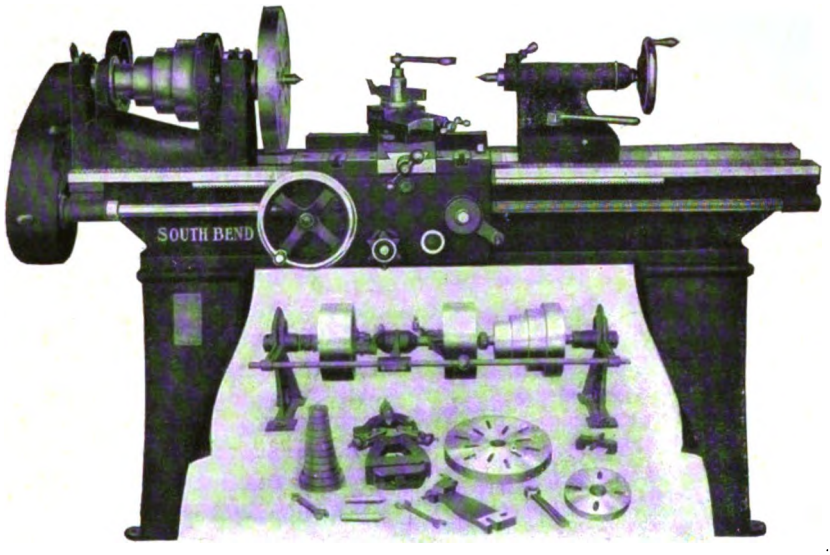

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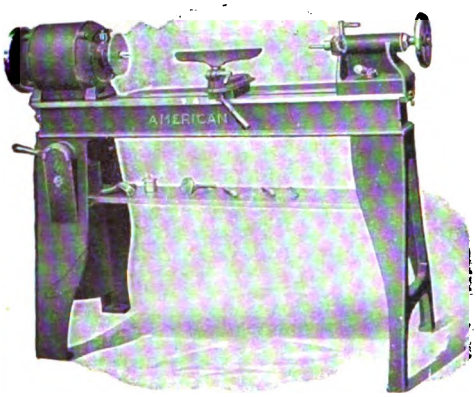

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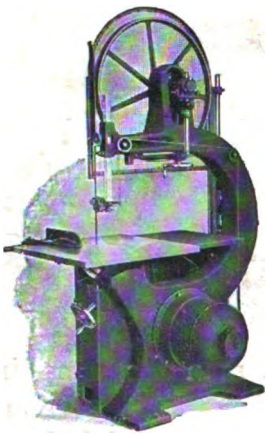

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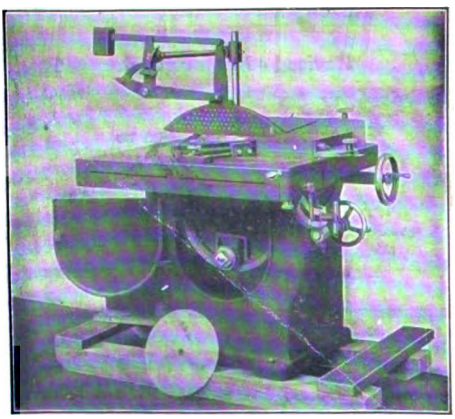

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In 1917 there was turned out on these machines furniture valued at $13,800. The tools have paid for themselves many times over.

Pupils from the sixth, seventh and eighth grades operate the machines **safely** and efficiently because the cutting mechanism is properly guarded.

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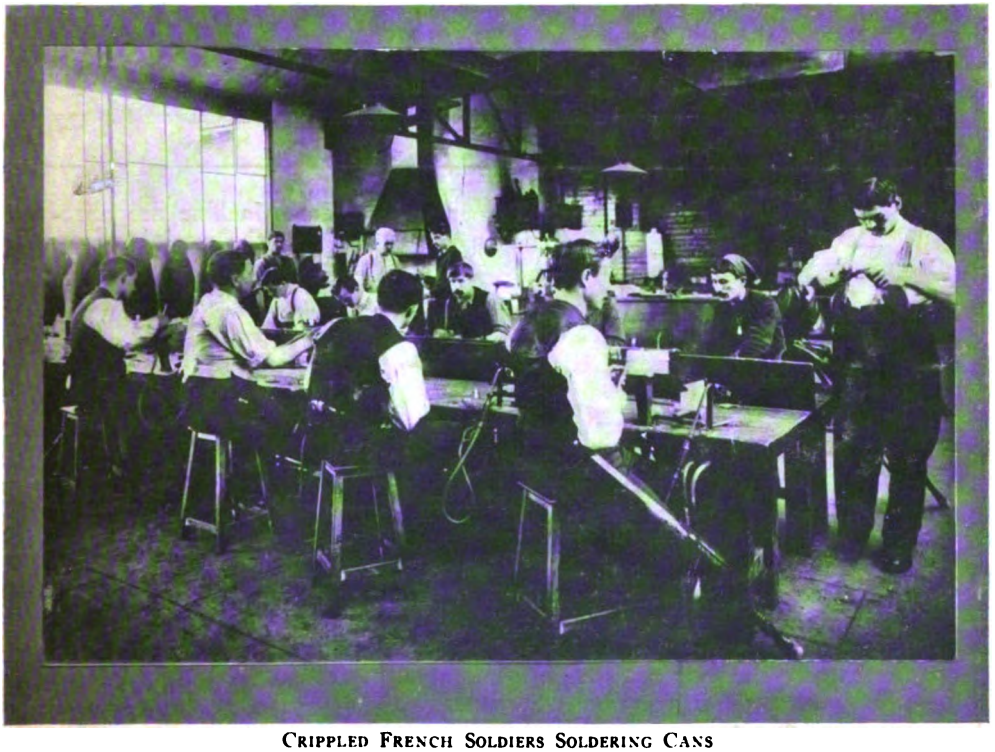

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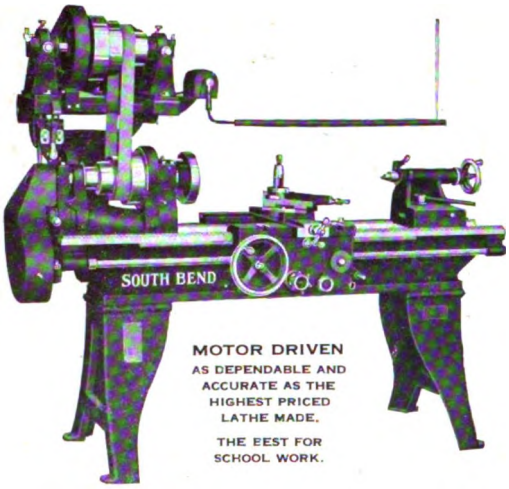

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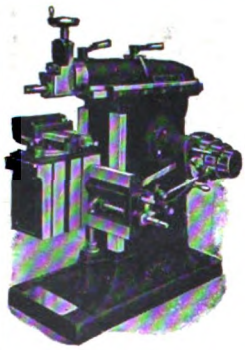

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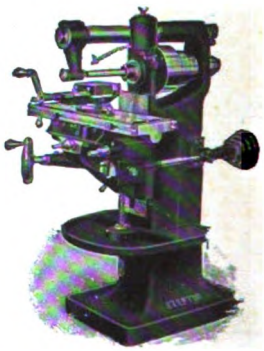

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This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.

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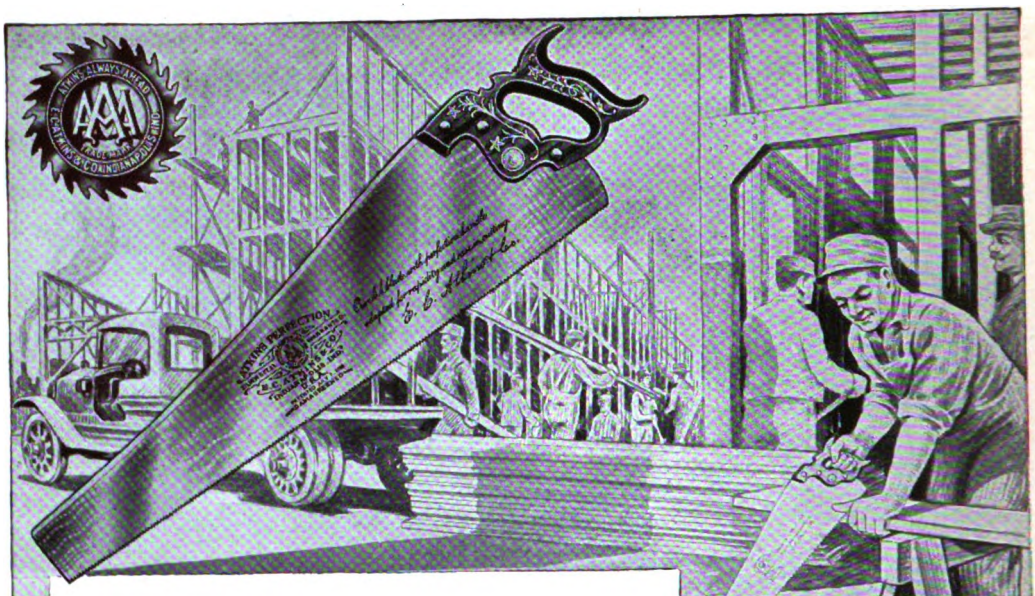

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FIELD NOTES

AROUND NEW YORK

PLANS for establishing a vocational school for boys and girls in the Borough of Richmond, New York City, are now being considered by the Board of Education. The proposal has already received the approval of the Board of Superintendents, who recommended the lease or purchase of the former office building of the Standard Varnish Works at Port Richmond for this purpose. They estimate that the building can be made suitable for school purposes at an expenditure of $20,000. The proposal is now being investigated by Frank D. Wolsey and Aming L. Proll, the members of the Board of Education to whom it was referred.

At the present time there are in the greater city of New York but four vocational schools, three of them located in Manhattan, and one in Brooklyn. This fact has been pointed out by the Board of Superintendents in their report, which states:

"It seems, under present circumstances and in consideration of future conditions in the industries, that similar institutions should be established in other boroughs. Thus, the Bronx with nearly a million inhabitants, should have vocational schools for both boys and girls and Queens and Richmond should have at least one each. An opportunity has presented itself to establish a vocational school in the Borough of Richmond. In that borough there is at present no opportunity for vocational training to any elementary or high school pupil. Any pupil deserving such education must go to Manhattan or Brooklyn. The isolated position of Staten Island makes it advisable to consider its school system, as far as school accommodations are concerned, as distinct from that of the rest of the city. Recently there has been an increase in population in the Borough of Richmond due to industries such as shipbuilding.

The proposed location of the vocational school at the Standard Varnish Works is accessible from all parts of Staten Island. It does not cover the entire lot, and hence can be added to if expansion should be necessary.

Since there is at present not a sufficient number of pupils in the schools of the Borough of Richmond to warrant a separate school for boys and one for girls, a school for both boys and girls should be established. The school for boys would accommodate the following:

Shops	Pupils
Machine shop	50
Forge and Foundry	50
Patternmaking	50
Total	150

The school for girls would accommodate:

Shops	Pupils
Power Machine Operating	50
Dressmaking	50
Millinery	50
Total	150

Pratt Institute, Brooklyn, is conducting one of the largest, if not the largest, school for training officers for the new Merchant Marine. This school offers unusual opportunity to a larger number of men to qualify for positions at no cost to themselves. There are day and night classes enabling applicants to support themselves while studying.

The course was established by the United States Shipping Board to meet the needs of a new national fleet of merchantmen which will be about 4,000 officers and 4,000 engineers in addition to those already in service. The following are the qualifications demanded of applicants: For deck officers' license (Navigation School) two years deck service on an ocean or coastwise steam vessel; or three years on a sailing vessel; or three years on a sailing fishing vessel, ocean or coastwise; or one year, mate of steam fishing vessel; or one year, master or pilot, lake, bay or sound steam vessel; or graduation from seamanship class of a nautical schoolship. For engineers' license (Engineering School) three years as fireman, or ocean or coastwise steam vessel; two years as oiler or watertender (or combined service of two years in these positions); six months as chief or assistant engineer, on lake, bay or sound steamer; one year, chief or assistant, river steamer; one year as locomotive or stationary engineer (with specified sea service which may be obtained after finishing school course); graduation from engineering class of nautical schoolship; graduation from a mechanical engineering course in a technical school (with six

(*Continued on p. VI.*)

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FIELD NOTES—(*Continued from p. V.*)

months sea service); one year in charge of stationary plant of not less than 1,000 horsepower; three years as apprentice to machinists' trade (with six months sea service).

In addition to the above all applicants must be native or naturalized American citizens, and must be over 19 years of age. They must be in good health, with correct vision and good hearing, and must be able to speak, read and write English readily, and do ordinary figuring correctly. The term of the day course is six weeks in navigation and four weeks in engineering. The evening course is somewhat longer.

The Brooklyn Free School of Marine Engineering at Pratt Institute was started July 22 and has graduated a great many men. Not one who has taken the course has failed. The work is in charge of Professor J. P. Kottcamp, head of the department of mechanical laboratories of the regular Pratt Institute faculty.

Children from fourteen to eighteen years old living on the East Side of New York City who cannot be persuaded to return to school, are helped to find jobs by a special juvenile section of the United States Employment Service at Fifty-seventh Street and Third Avenue. The office is cooperating with the Childrens' Bureau of the Department of Labor and the child conservation section of the Council of National Defense in their "back to school" drive. About two-thirds of the children applying for positions are boys and the great majority are over sixteen.

Miss Cohen, who is in charge of the work, said recently, "Our first question to each child is 'Why did you leave school?' We find that in most cases it is dissatisfaction with school rather than economic necessity which drives these children to look for jobs. We have had very little success in persuading children to return to school. This is largely because most of those who come to us have already been working a year or more. Many of the boys have been employed in munition factories at from $14 to $25 a week. We are not able to offer them more than $10. In fact, many employers offer only $8 or $9 a week and expect the boys to dress well on that. One employer in a West Side shop, whom I interviewed, recently offered $8 and warned me not to send him poor boys. I explained that a boy would have to be well off to accept a position with his firm.

"It is difficult" Miss Cohen continued, "to persuade a boy who has been getting from $14 to $25 a week to accept a position at $8. Yet if he wishes to learn a trade he must do so. No employer will pay more, and few as much, to a child while he is learning. The boy naturally prefers to go into unskilled factory work, which pays better at the outset. One result of the big wages children have been receiving during the war will be an increase in the number of unskilled workers."

—W. H. DOOLEY.

IN AND ABOUT BOSTON

THE annual Get-to-gether dinner of the Boston Manual Training Club was held at the Boston Architectural Club on Dec. 21st. The entertainment included songs, recitations and impersonations by a Mr. Handy engaged for the evening, singing by the crowd and flute playing by Mr. Theodore M. Dillaway. This last feature was particularly enjoyable. Mr. Dillaway was accompanied by Mr. Grant Drake and each selection rendered was a musical treat. The chorus singing was led by Mr. George F. Hatch, who succeeded in arousing the enthusiasm of every man present. After the merrymaking had subsided and the tables were cleared the first speaker of the evening, Private Maurice E. Gavitt, was introduced. Private Gavitt had been in active service in France and his message was one which could not fail to interest all who had not actual experience at the Front. He pictured very vividly the conditions of trench warfare and gave his personal experiences from the time of his departure, after but two months training in camp, to his welcome upon landing in New York. On March 10th he landed at Brest, France, and was billeted in the old Napoleonic barracks which were "very old, very damp and full of rats." From there he went to St. Agnon where the men were reclassified and sent to the Toul sector. After considerable tramping they reached Beaumont where they were told not to go any farther else they would find themselves in the German lines. At Maudre they were assigned to their companies. Mr. Gavitt was assigned to Co. M, 162 Infantry. Here, on the

(*Continued on p. VIII.*)

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The Finish Is Important!

SURELY this is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

JOHNSON'S WOOD DYE

Is just the preparation for staining models. It is very easy to use—goes on like oil without a lap or a streak. It is made in 14 attractive shades—which may be easily lightened and darkened. Over the dye apply a coat of

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This gives a soft, artistic finish of great beauty and durability. It is clean and easy to use and economical—no tools or brushes required—all you need is a cheesecloth rag.

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second night, he and his companions had their first gas alarm which, though it turned out to be false, considerably excited the new men. Later, Mr. Gavitt slept through a real attack, was gassed and suffered blindness for over two months. The effect of the gas was not at first noticeable and he was able to go into battle with his comrades. Following the excitement he became very ill and was taken back of the lines where he spent much time in hospitals. Mr. Gavitt spoke enthusiastically of the wonderful surgery performed by the Johns Hopkins unit. He attributed his recovery to the skillful doctors and the excellent nursing at the hands of the Red Cross. The work of the Red Cross in supplying the needs of the men, of whatever nature, was given high praise. His manly references to the way the boys' thoughts would turn back to home and "mother" were greatly appreciated by his audience. Upon the completion of his talk Private Gavitt received three rousing cheers. Three cheers were also given the Red Cross.

Ensign Francis J. Emery was the second speaker. Mr. Emery was granted leave of absence for aviation service in the navy, from the Mechanic Arts High School where he is instructor of woodworking. He described in detail the rigid training in the ground school at Mass. Institute of Technology and his very interesting flying experiences at Pensacola. All of the instruction was of a very definite nature and covered a variety of subjects all necessary to the naval aviator. One hour a week for six weeks is given to a study of the navy organization in order that the "red tape" may be understood and appreciated. Some of the other subjects are bombing and gunnery, radio operating, electricity, signalling, etc. The students study planes and actually design them but those designed by the students never fly. As to flying, Mr. Emery described it as wonderful at first but after a few times up, "just like eating breakfast." Much emphasis is put on "safety first" precautions and the need for quick headwork in times of emergency. The work at Tech. was theoretical and dealt with what an aviator should know. At the elementary station the actual flying begins. The student is taken up with a pilot who can take the wheel at times of danger. Here the conferences of four to sixteen students who give each other the benefit of their experiences are very helpful. "You tried a flipper turn and as soon as you tried it the pilot took the wheel else there might have been two funerals. The information is passed along to other fellows. This is co-operation."

Mr. Emery described the various types of "boats" such as N-9's, R-6's, Hs1, Hs2, N. P., F, etc. and told how they act in the air. After "soloing" in these different machines the student is given his finishing touch. He is sent up with a complement of nine men under sealed orders with emergency rations, radio outfit and operator. After five minutes of flying he opens his sealed orders and follows directions. Making calculations for the wind he flies the course ordered and returns. Of a hundred men who have taken these test flights the variation from the calculated time for the return has not been greater than one minute. Mr. Emery was most interesting in his descriptions of his sensations in the air; how the sense of motion is lost when away from objects on land, the surprise at the force of wind against the hand when held out, the confusion resulting from an unexpected turn, etc. "It is a game for the young fellow. The middle aged man has not the nerve or physical courage to stand it."

John C. Brodhead, assistant superintendent of schools, Boston, was the last speaker. From March to September Mr. Brodhead was directing the shop activities and mechanical training at Camp Joseph E. Johnston, Jacksonville, Fla. This is the main training camp for quartermasters, the only other being a small one located in Washington. Some of the activities under Mr. Brodhead's direction were carpentry, harness making and repairing, gas engine repair work, blacksmithing, tailoring, truck driving, meat cutting, cooking, electricity, etc. In describing the organization Mr. Brodhead gave a good idea of the magnitude and importance of the quartermaster's department. The classifying of men, working up material for instruction and arranging programs required long hours and close application of the instructors who enthusiastically gave their best to the work. As an illustration of some of the tasks accomplished there was need of preparing to train 2,000 men.

(*Continued on p. X.*)

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PRINTING EDUCATOR

Being a facsimile of the front page of a school paper such as could be printed in your school—if printing outfit were installed.

Education Department | American Type Founders Company | 300 Communipaw Ave. Jersey City, N. J.

School Paper an Aid in Education

ASIDE from its educational and vocational values, one of the advantages of a printing outfit in an educational institution is that it provides facilities for the printing of a school paper. Truly the school paper that is actually printed in the school printing department is a perfect coordination of the educational faculties, "Brains, Heart, and Hands."

The school paper, when it is properly planned, edited and printed, will create school patriotism and an increased interest in all activities of the school, educational, athletic and social. It can be made the bulletin of all news regarding the school and can be used as a means of interesting parents by acquainting them with the aims and purposes of furnishing instruction that will appeal both to the motor and sensory faculties. The school paper will acquaint parents with the progress being made by the pupils, and it will afford the principal of a school the opportunity to talk logically and convincingly to the parents of the pupils under his charge. The school paper should be to the school what the newspaper is to the community—a purveyor of news, a public forum for the discussion of relevant matters, and a molder of public opinion.

Art, English, composition, punctuation, spelling, mathematics and mechanical skill form the necessary combination for producing a school paper of value. Such a paper, by creating the demand, will have a tendency to promote logical thought and careful assertion on the part of the pupils, will stimulate originality in ideas, execution and art, and unite into a compact, progressive force all the individual departments of the modern school.

A Service Bureau for Superintendents

DURING the last few years there has been an increased demand for information from superintendents of schools, supervisors, principals, and teachers regarding the educational value, economic advantages, and cost and maintenance of school printing equipments. The information furnished by the Education Department of American Type Founders Company in compliance with this demand has been prepared and offered by men of wide experience in industrial education, and in the printing industries, and in designing the wonderful labor-saving inventions that have marked the progress of printing.

Education Department

American Type Founders Company

300 Communipaw Avenue, Jersey City, N. J

This article is set in Century Schoolbook, a new eyesight-saving type designed for educational printing and advertisements. Note its extreme legibility.

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The training division had 36 hours in which to assign the instructors, arrange instruction material, decide upon teaching quarters, make a program and shift some 10,000 men. This required working all Saturday night and all day Sunday but at 7 o'clock Monday morning everything was in readiness for the new classes. In meeting the demands from Washington for a given number of men to be trained in a particular line by a certain date, the training division had its hands full. There were times when the truck driving instructors would work from 8 A. M. to 10 P. M. for two weeks, Sundays included. The training for this important branch of the service included all kinds of driving, from easy manipulating in daylight to company formation in the dark with gas masks on. Men in training were often very suddenly called upon to leave for the Front. Upon order for a man of certain qualifications, records would be consulted, the man located and in fifteen minutes he would be on a train furnished with his proper equipment and bound for France. The various types of men from different parts of the country gave plenty of opportunity for character study. There were many from out of the way mountain districts with feminine names, such as Elizabeth, Florence, Marie, Gladys, Mabel, etc. As an illustration of the ignorance existing in some localities, one man at the camp received a letter from his father in a hill town expressing his pleasure in having his son in training. The letter read, "I am glad you are in the war. I knew we would have to lick those d— Yanks again." This, together with the fact that 10% of our population is illiterate, shows that we have some educational problems yet to solve.

In all army and navy training the one feature which stands out prominently is definiteness of aim. This, together with the urgency of the need, explains the wonderful accomplishment of the intensive military and navy courses. Perhaps the accomplishment of our schools could be made much greater than in the past by having a specific and worthy aim for each phase of our work.

John A. Fisher, after a year's leave of absence for service with the Emergency Fleet Corporation has returned to his work in Boston as shop foreman in machine shop practice in prevocational schools. John A. Lane, instructor machine shop practice in Boston Prevocational Schools, has been in service in the training department of the Charleston Navy Yard. He returned to his school work Jan. 27th.

Ellsworth M. Longfield, division head, sheet metal work, Boston Trade School has returned from an extended leave of absence for service in the Education and Training Division of the Emergency Fleet Corporation.

The Boston School of Occupational Therapy exhibited the work of its students at Wentworth Institute on Friday, Jan. 10th.

—GEORGE M. MORRIS.

MINNESOTA NEWS

THE other day we had a very enjoyable visit with Supervisor George M. Brace, of St. Paul. Those who are familiar with the school situation in St. Paul will appreciate the task that confronts Mr. Brace. We prophesy however that the progressive vocational ideas and ideals which he is projecting into the curriculum will make themselves known in a higher standard of vocational and manual training education for the city. I am not privileged at this time to go into details, but may say that Mr. Brace presented some ideas and plans which are working out in the St. Paul schools that are the most progressive we know of. The one great fault that has been found with the manual training movement by all academic educators has been that we had no standards of achievement. We feel sure that Mr. Brace will have something worth consideration on this subject when he can be prevailed upon to talk.

The University of Minnesota announces evening extension classes in trade and industrial teacher training to be held in Duluth, Virginia, St. Paul and Minneapolis. The university has been designated as the teacher-training school by the State Board for Vocational Education under the Smith-Hughes Act. G. A. McGarvey is supervisor of trade and industrial education for the State Board, offices with the State Department of Education, St. Paul, Minn.

The course will be in methods of teaching trade and industrial subjects. There are eight

(*Continued on p. XIV.*)

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Your Pupils Will Do Better Work

With KEEN KUTTER Tools

The right tools are a most important factor in your pupils' progress. With tools that are correctly designed and expertly adjusted and sharpened before they leave the factory, the work will be easier and more fascinating.

KEEN KUTTER tools have made an enviable reputation in the hands of skilled mechanics. They have suited the most exacting professional builders for years and they lend just the extra touch of added efficiency that is needed to help out the beginner's efforts.

KEEN KUTTER tools are uniformly dependable and you can always identify them and know just what you are getting by looking for the KEEN KUTTER trade-mark.

SIMMONS HARDWARE COMPANY

"The recollection of QUALITY remains long after the PRICE is forgotten."

—E. C. SIMMONS

Trade Mark Registered

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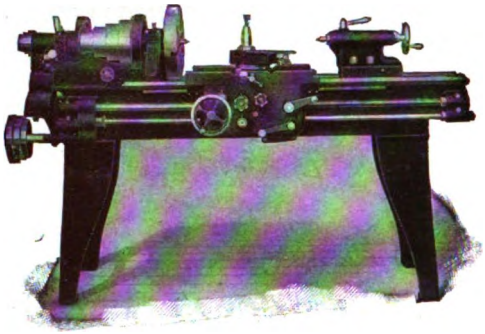
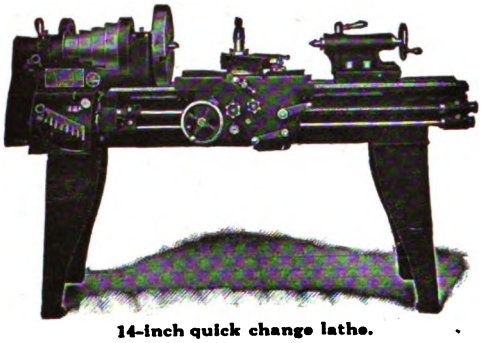
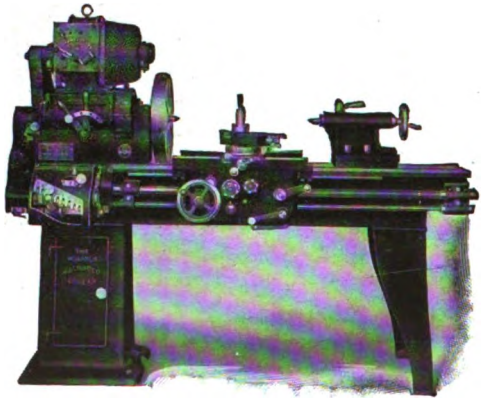


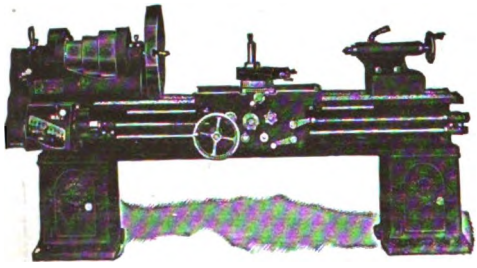
14-inch MONARCH standard lathe.



14-inch quick change lathe.



16-inch Motor driven geared head.



20-inch MONARCH lathe.

MONARCH LATHES

from 14 to 20 inch swing

offers the ideal lathe for the manual training school. They are furnished in any style and with practically all attachments desired.

MONARCH lathes are low in price yet are as accurate as the highest priced lathes. By installing **MONARCH** lathes you can in many instances put in **two MONARCH** lathes for the same cost as **one** of the high priced lathes.

MONARCH lathes are in use in many factories and tool rooms with lathes costing almost twice as much doing just as much and as accurate work.

It is not necessary to pay a high price to secure a good engine lathe.

Let us send you our catalog and list of manual training schools using the Low Priced **MONARCH** lathes.

THE MONARCH MACHINE TOOL CO.

SIDNEY, OHIO

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VOLUME XX No. 6

MANUAL TRAINING MAGAZINE

FEBRUARY, 1919

HOW THE WAR HAS AFFECTED ENGLISH EDUCATION

F. H. KNOWLES
Editor of "*Manual Training*," Official Organ of the National Association of Manual Training Teachers in England

THE GOOD news we are getting makes us realize how dark and depressing were the days thru which we have passed during the last four years. History must be left to record our attitude under the stress of war. You in America know by now what war means, for casualty lists and the return of the wounded strike the imagination and bring home to us the price to be paid. Bitter and tremendous tho the fight has been, and appalling the loss of life and the destruction and devastation, it has been worth while. Autocracy and all it implies has been dethroned and the free peoples of the world breathe again. For this the hearts of all the Allies go out to America. When the time came you did not hesitate to come in altho you saw the cost written in blood and tears across Europe. Without your help the war may have gone on for many weary years until one or the other of the belligerents had succumbed from sheer exhaustion.

Our losses have been great; there are few homes that have escaped; and in the midst of our rejoicing that war has ended we recall with a sob those who gave all, who lie in another land "crowned with the sunshine of immortal youth." Having experienced this, and in the midst of it all, when we had but the heroism of our men to comfort us, when our armies were forced to retreat, and with nothing to stimulate us but our unbounded faith in the future and the ultimate triumph of right, it may be accounted to the credit of this old country that we set about the work of reconstructing our educational system. Not that it had failed us entirely—the conduct of our men, 90 per cent of whom were educated in our primary schools, is proof otherwise—but because both the state and the masses had hitherto undervalued education, with the result that it was starved and neglected. At the beginning of the war the system was disjointed and lacking in cohesion; teachers were underpaid and discouraged; for years the number of teachers trained had been far behind the needs of the country; unwieldly classes of 60 were a common feature in our primary schools; facilities for the secondary education of poorer children were meagre; and schools for vocational education were few and only existed in the larger towns.

Such, briefly, was the state of education when Mr. Lloyd George became Prime Minister of a coalition government. The post of minister for education, which is termed the President of the Board of Education, was, under the system of party government, considered to be of secondary importance and so was allotted, not on the

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grounds of fitness, to someone, who, may be, had only taken a perfunctory interest in education. But Mr. Lloyd George, abruptly breaking away from the political traditions of the country, went outside Parliament for some of his ministers, one of whom, Dr. H. A. L. Fisher, he made President of the Board of Education. Dr. Fisher, although quite unknown in the political arena, is a scholar of high attainments, a sound educationist, and one who has a proved reputation, on the practical side, as a highly successful administrator of one of the newer universities of which he was vice-chancellor.

The choice could not have been a better one, for with unerring prescience he realized that as an essential preliminary to any remodelling of the existing system, the teacher's position must be made more attractive and secure. Government departmental committees were set up to decide what principles should govern the fixing of salaries in all types of schools, and whilst these committees were collecting evidence Dr. Fisher induced Parliament to make a grant of six million pounds, as a first installment, for the improvement of teachers' salaries. This grant enabled salaries to be raised by about 15 per cent. Since then departmental committees have reported in favor of a radical improvement of the remuneration of teachers, and it is gratifying to note that local education authorities, without exception, have raised the maxima of their salary scales and in some cases by as much as 100 per cent. Besides these reforms a comprehensive Pensions Bill has just passed its final stage and thus become an Act or Law. It provides adequate pensions together with a lump sum equivalent to a year's salary on retirement, and in the event of death before retirement, a grant is made to those dependent on the teacher. These then are Dr. Fisher's schemes for making the teaching service more attractive.

Whilst busy on matters for improving the material side of the teacher's lot he was also planning and putting thru Parliament his great Education Bill which has now become an Act of Parliament and will be known in the future history of this country as the third great landmark in national education.

What does it do? With a view to the establishment of a national system of public education available for all persons capable of profiting thereby it enacts that primary education shall be reorganized on the physical and medical sides to link it up with higher education; that the full time school leaving age shall be raised without exception to 14, and even to 15 if local authorities desire; that compulsory part-time continuation day schools shall be established for all children between the ages of 14 and 18 for a period of eight hours a week; that every form of paid employment for children under 12, and for all children during the week before school hours, shall be abolished; and that all local authorities shall be compelled to co-ordinate all grades of education under local schemes half the cost of which will be paid by the State. This then is briefly what the Education Act says must be done. How it will be carried out in practice and the part vocational and manual training will play in the new schemes must be left to a later article dealing more in detail with educational reconstruction in England.

November 30, 1918.

The sure basis of a nation's strength is in industry as much as in intellect, and in skill as much as in resources. The assurance of a nation's greatness is in the equipoise of mental and manual activities.—Andrew S. Draper.

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THE DEVELOPMENT OF TEACHER TRAINING IN TRADE AND INDUSTRY UNDER THE SMITH-HUGHES ACT

K. G. SMITH

Regional Agent Federal Board for Vocational Education, East Central States

THE Federal Board for Vocational Education recognizes two kinds of teachers employed in trade and industrial schools; vocational and non-vocational teachers. The vocational teachers, with whom we are immediately concerned, are divided into two classes—the shop and the related subjects teachers. A shortage of both classes of teachers exists at the present time. It is the purpose of this article to discuss the means of securing and training these teachers.

THE PROCESS OF MAKING TEACHERS

Making teachers is a manufacturing or production process. We, like the manufacturer, decide what kind of a product our plant is to turn out. In this case, as stated above, it is shop and related subjects teachers. Our next problem is to decide on the raw material best adapted to our purposes, and then to consider the probable sources of this raw material, for this will, in certain cases, determine at once the location of our "teacher factory." The equipment and manufacturing processes to be used in our factory come next, and last of all a consideration of the various uses of our product.

THE RAW MATERIAL

In order to make these statements perfectly clear a chart of this particular manufacturing process has been drawn up and the steps in the process will be discussed one by one. The raw material for the shop teacher is the skilled tradesman whose education up to the time he enters a teacher-training course, contains three elements: manual skill, technical knowledge and trade intelligence represented by the symbols M, T and I, page 194. In selecting the material for a shop teacher we lay particular stress on the elements M and I, that is on the manual skill and the trade intelligence.

The raw material for the teacher of related subjects is found in the teacher, the technician or the engineer, possessing in a different proportion the necessary elements M, T and I. In this case we lay particular stress on the T and I, the symbols having the same meaning as before.

SOURCES OF RAW MATERIAL

For the shop teacher, practically our only source is the shop man who may be a high school, a technical school, or trade school graduate or a wholly shop-trained man. In some cases a manual-training teacher may be found whose previous experience fits him to become a vocational shop teacher.

For the teacher of related subjects the sources of raw material are more varied and we may draw upon the rather rare combination, a skillful tradesman with a considerable fund of technical knowledge, the high school graduate, the two or four year technical graduate and the manual training teacher, all of whom must have had or be willing to acquire practical experience. In some cases non-vocational teachers have been found with sufficient technical knowledge to form a foundation for good related-subjects teachers. Practical experience is purposely emphasized here as a fundamental requirement for a vocational teacher. Our engineering colleges recognized long ago the necessity of practical experience in addition to technical knowledge for successful teachers of engi-

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WHAT WE NEED	RAW MATERIAL		SOURCE
The Shop Teacher.....	Skilled Tradesmen M + T + I = — =	secured from	Shop Trained Men Technical Graduates with Shop Training Trade School Graduates with Shop Training
	M—Manual Skill T—Technical Knowledge I—Trade Intelligence		
The Related Subjects Teacher..	Teacher Technician or Engineer	secured from	Tradesmen with Technical Knowledge Two Year Tech. Graduates with Practical Experience Four Year Eng. Graduates with Practical Experience Manual Training Teachers with Practical Experience Men who have completed Two years of any standard engineering course and have had practical experience High School Graduates with practical experience
	M + T + I — = = M—Manual Skill T—Technical Knowledge I—Trade Intelligence (Underscoring indicates relative importance of three elements)		

neering subjects. No man or woman ought to think of entering the field of vocational teaching without acquiring in addition to technical knowledge, sound practical experience, secured not alone by a superficial survey of industry or practice in a school shop, but by actual work for wages under commercial conditions for a reasonable length of time. Some men now teaching in our engineering schools, should they wish to take up vocational work, would make excellent material for vocational teachers of related subjects. In fact many of them are already engaged in teaching evening classes of a vocational character.

SECURING THE RAW MATERIAL

The raw material for the shop teacher cannot, as a rule be brought to the factory, the difficulties of transportation and storage are too great. The factory must be located where the raw material is; in other words, in an industrial center. In cases where the factory, or teacher training institution is not in an industrial center, it means the establishment of a branch or extension center in a neighboring city to give training in evening classes. Related-subjects teachers may be trained in resident courses or in evening extension classes or both. In this case the raw material may be brought to the factory without much difficulty.

The actual securing of the right material for vocational teachers does sometimes present difficulties. The following methods have proven successful for shop teachers:

(1) A personal canvass of the men in a plant as recommended by the employer or foreman.
(2) Addressing the locals of various labor organizations approached thru their secretaries.
(3) Addressing noon meetings in shops.
(4) Newspaper advertising.
(5) Mailing letters and application blanks to prospective candidates.

In this connection it is well to consider the possibility of training these men specifically to give instruction in their own plants to "green help" as instructional foremen. In this capacity they remain employees of the plant in which they work, but at the same time secure practice in the art of teaching shop processes and form a reservoir of supply from which shop teachers may be drawn in the future as need arises. They are at the same time making themselves more valuable to their employer by learning to train "green help" or learners of any kind rapidly and effectively. The opportunity here for "supervised

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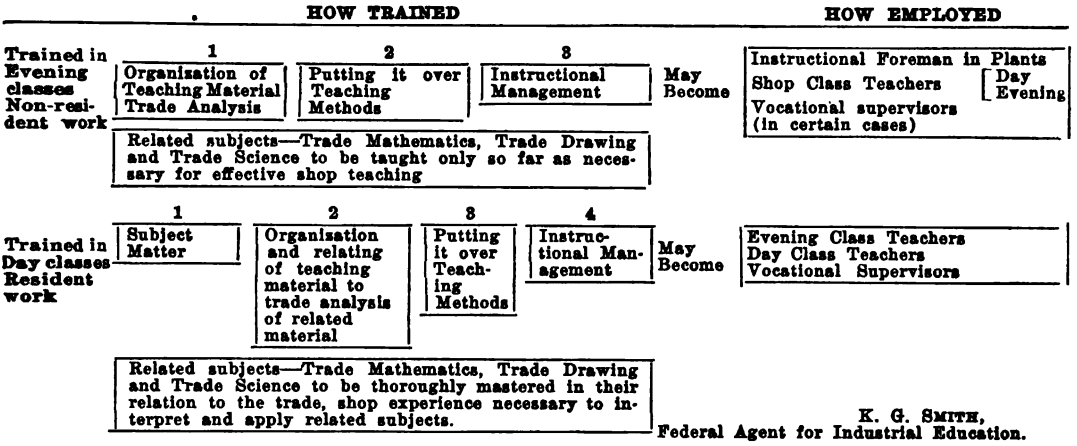
HOW TRAINED
HOW EMPLOYED
Trained in Evening classes Non-resident work
1 Organization of Teaching Material Trade Analysis
2 Putting it over Teaching Methods
3 Instructional Management
May Become
Instructional Foreman in Plants
Shop Class Teachers
Vocational supervisors (in certain cases)
Day
Evening
Related subjects—Trade Mathematics, Trade Drawing and Trade Science to be taught only so far as necessary for effective shop teaching
Trained in Day classes Resident work
1 Subject Matter
2 Organisation and relating of teaching material to trade analysis of related material
3 Putting it over Teaching Methods
4 Instructional Management
May Become
Evening Class Teachers
Day Class Teachers
Vocational Supervisors
Related subjects—Trade Mathematics, Trade Drawing and Trade Science to be thoroughly mastered in their relation to the trade, shop experience necessary to interpret and apply related subjects.

K. G. SMITH,
Federal Agent for Industrial Education.

teaching" is obvious. Some may object to this because the instructional foreman does not teach directly under public supervision in a school system. This is true, but it is also true that much of our best and most definite vocational instruction must be given "on the job" and we, as champions of industrial education, will do well to aid in making such instruction as systematic and effective as possible. An evening or part-time school or both should always be closely connected with this form of shop instruction, and the establishment of such schools will be made much easier and their success more assured if by means of a training class for instructors the sympathetic cooperation of foremen is secured.

By reason of the fact that related-subjects teachers need a more extensive educational foundation, they are more readily found among resident students, and about the only method to be pursued in securing prospects is that of personal canvass. Some, of course, will be found already in employment, in which case the very same methods used in the case of shop teachers will be effective.

THE MANUFACTURING PROCESS OR CONTENT OF A TRAINING COURSE

The content of the training courses for industrial teachers is at the present time in a very unsettled state. However, the following facts do stand out:

(1) A man who satisfies the prerequisites for entrance into a shop-teacher training class does not need to be taught the subject matter of his trade.

(2) A related subjects teacher if he knows industry must be taught the related subjects as related to industry.

(3) A related-subjects teacher if he knows the related subjects must be taught industry in its relation to those subjects.

Referring to applicants for a shop-teacher training class it may be noted that in some localities all-around craftsmen cannot be secured. In this case it will be necessary to give supplementary shopwork in a teacher-training course, a fact which is not indicated on the chart.

As a rule the average tradesman who enters a teacher-training course is in about the same state as the average proprietor of a country store. He has an excellent stock of goods but he has not arranged nor labelled his stock. Consequently he does not know where anything is and is at a loss to find the goods suited to his customers. The craftsman has an excellent stock of knowl-

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edge but has never arranged and labelled it.

The first thing to be taught in any shop-teacher's course is trade analysis; the determination of *what* is to be taught and then the proper arrangement of the material in teaching order.

Two kinds of analyses may be made; the trade analysis which gives a birdseye view, so to speak, of the field to be covered, and the job analysis which goes much more into detail for teaching purposes. Professor MacDonald of the University of Cincinnati in his pamphlet on the training of industrial teachers, has aptly termed these the "administrator's analysis" and the "instructor's analysis".

The second thing to be taught a shop teacher is teaching methods. He knows little or nothing of lessons, of plans, of the difference between telling and showing and teaching, and all the underlying principles of the teaching process. Teaching is to him a new trade. Instruction and training of men, not production of manufactured articles is to be his aim. This new trade he must learn and must change his attitude of mind from that of a producer of a manufactured product to that of an instructor or producer of trained men.

The third thing to be taught a shop instructor is instructional management, the details of handling classes, keeping records, making reports, the organization and management of industrial schools, history of industrial education and educational psychology, if you like, but not too much and of the right kind. Naturally he will need also a sufficient knowledge of trade drawing, science and mathematics to enable him to teach his own shop subject effectively. He is not to become a draftsman nor an engineer.

The related-subjects teacher may lack either a knowledge of the subject itself or a knowledge of its industrial applications, consequently subject matter may be an important part of his course.

In any case it is important for him to make a careful analysis and study of his trade under the following heads:

(1) Classes of work done

(2) Trade science
- Knowledge of materials
- Knowledge of tools
- Knowledge of scientific principles and facts
- General knowledge

(3) Trade mathematics

(4) Trade drawing

Much valuable material for such analyses will be found in the various vocational surveys made and in certain trade analyses prepared by E. G. Allen of the Cass Technical High School, Detroit, Michigan. The analyses of the trade as made by the shop teacher and the related-subjects teacher are quite different in character. The one analyzes on the basis of jobs for the purpose of teaching the actual job; the other analyzes on the job basis for the purpose of determining just what auxiliary knowledge is necessary for a man to do the job. With the one the job is of primary importance and the thing to be taught, with the other it is of secondary importance, and not the thing to be taught but the reason for and basis of his teaching.

In the other parts of the training course the work of the shop and related-subjects teachers is much the same. In instructional management naturally the methods differ, due to the different kinds of work taught and the different surroundings under which it is carried on. In either of these courses, however, the more general and advanced subjects mentioned above, such as organization and management of industrial schools, history of industrial education and the like belong in the latter part of the course. No attempt should be made to crowd them into the earlier stages.

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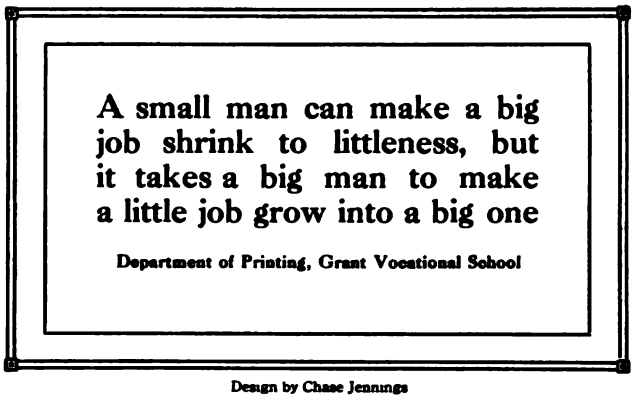
Some of our Departments of Education are offering subjects of this character in special summer courses open only to those who have satisfactorily completed preliminary teacher-training courses. It would seem that when our industrial teacher-training programs are once fairly under way that such special courses would be very desirable and well attended. In fact it is to such courses and to such material that we must in the future look for many of our most successful vocational supervisors.

With a view to providing well equipped related-subjects teachers some of our engineering colleges are offering four-year courses leading to an engineering degree in which approximately twelve semester hours are devoted to industrial education, professional training and practice teaching. Men who have had such a course and are in sympathy with the aims and methods of industrial education would make excellent related subjects teachers. There is a danger, however, that these men may make their instruction too technical, and the fact should be impressed upon them that an industrial class is not the place in which to exhibit vast stores of engineering knowledge accompanied by the application of higher mathematics. A knowledge of how to explain simply and what to omit is a *sine qua non* for a related-subjects teacher.

The whole field of the training of industrial teachers is new and departments of education can render a great service by attacking the problem of organized training. To render service, however, they must recognize that the problem is a new one and requires a knowledge of industry and industrial processes as well as a knowledge of education and educational processes. The field requires new thought, new ideas and new methods. It is not merely a new field for the exploitation of old ideas and old methods.


A small man can make a big job shrink to littleness, but it takes a big man to make a little job grow into a big one
Department of Printing, Grant Vocational School

Design by Chase Jennings
FROM ST. JOSEPH, MISSOURI

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TEACHING OXY-ACETYLENE WELDING

II. THE WELDING COURSE

LIEUTENANT CYRUS RICKEL
Camp Herring, Peoria, Illinois

IT IS particularly hard to outline a course of study in oxy-acetylene welding that will be adaptable to all educational institutions but the tentative course which follows is very elastic and will probably cover the majority of study requirements. This course is based primarily upon the course of study and shop procedure used at the Ordnance Army Welding School, Peoria, Ill. In this course particular attention is paid to the theoretical side of oxy-acetylene welding. In this respect the course differs from any previously offered and is suitable to educational institutions.

The theoretical side of oxy-acetylene welding should be covered by a series of lectures including the five commercial metals; namely, cast iron, steel, brass, malleable iron and aluminum. In addition it is necessary that a thoro knowledge of the following subjects be obtained by the student, and each one should be covered in a separate lecture: namely, (*a*) welding apparatus, (*b*) apparatus operation, (*c*) apparatus repair, (*d*) welding equipment, (*e*) preheating agencies, (*f*) carbon removing and (*g*) oxy-acetylene cutting.[1]

The lectures should be illustrated with chalk talks on the blackboard and the questions included in the lecture should bring out the general principles in each particular subject. The student should work out many individual problems by himself. He should keep a good set of notes on the lectures and should be required to write up and hand to the instructor for correction each lecture. In order to keep the lectures even with the practical shopwork the lectures may be arranged so as to bring one or more of the second group of subjects between the lectures on the commercial metals. It will be necessary for the instructor to keep a set of marks upon this work and it has been found that three grades only are required. A student either does excellent, good or poor work.

The student should receive the lecture on welding apparatus and on apparatus operation before starting any work in the shop. The lecture on apparatus should describe in detail the various parts of the apparatus and the uses of each part, particular attention being paid to the regulators and to the torch. These are two vital parts, and their construction and working principles must be understood thoroly before the student attempts to use them. There are two types of regulators on the market and are used according to the type of work which must be done. In the so called high pressure regulators, the gas is passed in a much larger volume and at a much higher pressure than it is passed in the low pressure type. This means that it is not as easy to regulate the flow and get as fine an adjustment with the high pressure type as may be obtained with the low pressure type. In

[1]A series of twenty lectures with questions and answers covering the subjects mentioned above may be obtained from the United States Welding Co., Minneapolis, Minn. This series of questions and answers is recommended as an aid in outlining any course of instruction in oxy-acetylene welding. A new book titled "Manual of Oxy-Acetylene Welding," published by Wiley & Sons, New York, is highly recommended for the use of the student as a text and reference book. It fits with the above series of lectures.

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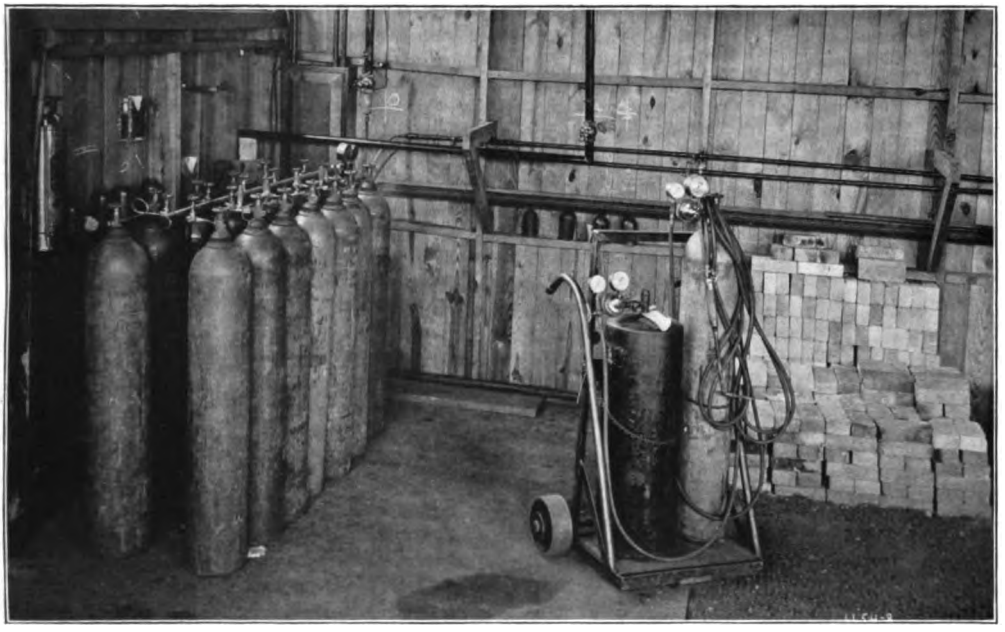
general there are four distinct features which differ in these two types of regulators. The high pressure regulator has a much heavier diaphragm which is smaller in diameter, making it stiffer and capable of withstanding a higher pressure; the tension springs acting upon this diaphragm are heavier and in many cases two springs



OXYGEN MANIFOLD AND STANDARD PORTABLE WELDING UNIT

are used; the nozzle which presses against the seat has a larger diameter to permit a larger flow of gas in proportion to the pressure, thus keeping the regulator from freezing. This type of regulator is equipped with a much larger pressure gage than can be used with the low pressure regulator. The high pressure regulator is used for the cutting of steel and on heavy welding work. The low pressure regulator is used on light welding work and ordinary welding where accurate adjustment of the flame is necessary. Acetylene regulators are manufactured only in the low pressure type and are not as strongly built as oxygen regulators. For this reason acetylene regulators cannot be interchanged with oxygen regulators, also if a small quantity of acetylene gas were left in the regulator and oxygen introduced, an inflamable mixture would be formed which is not advisable to have on account of its explosiveness. Tension should be removed from the diaphragm springs by screwing out the cross-bar of the regulator before admitting gas under pressure to avoid abusing the seat. The oxygen cylinders come charged at 1,800 to 2,000 lbs. pressure per square inch. The gas is contained in the cylinder in a free state, is non-inflamable and is not injurious in any way. Acetylene is stored in cylinders filled with an absorbent called acetone which is itself absorbed by a patent filler usually of mineral wool or asbestos. Acetylene gas is sold by weight, there being 14½ cubic feet of acetylene to the pound. Acetylene gas has a very strong peculiar odor, is highly inflamable but is not injurious if accidentally breathed by the operator. Oil and greases of all kinds must be kept from all oxygen and acetylene lines.

The student should be instructed in the

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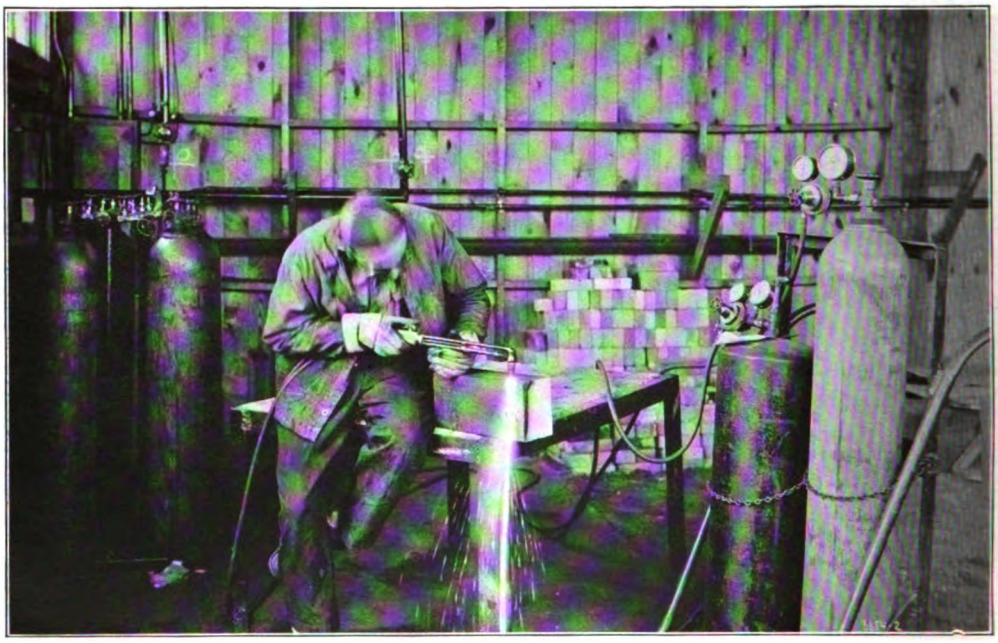
correct method of operating his apparatus. In turning on the gas, he should stand at the side of and a trifle to the rear of the cylinder, the oxygen valve should be opened wide as it is a double seated valve and the acetylene valve opened two or three full turns. With the valves on the torch closed the cross bars on the regulators are screwed down until proper pressure is obtained, then the acetylene valve on the torch is opened and the acetylene is lighted. Oxygen is then turned on until a strictly neutral flame is obtained. Great care should be taken to instruct the student in the various flames and to distinguish between a neutral and a non-neutral flame. A neutral flame is one in which there is complete combustion of both oxygen and acetylene. In equipping a shop for welding, many other articles are needed in addition to the welding apparatus. This shop equipment should include welding tables, emery wheels, portable grinders and drills, preheating torches, retort cement, blacksmith forges, carbon blocks, asbestos paper, "V" Blocks for lining up shafts and an assortment of mechanics tools. The operation and uses of all these articles should be described and explained fully to the students so that they will know how to use them when it is necessary to do so in the shop.

The lecture on apparatus repairs is extremely important for every welder must not only know how to operate his welding apparatus but also how to repair the same. Each student should be impressed with the fact that there is only one safe way in which to test for leaks, namely, by the use of a soapy solution of water. Never under any circumstances test for a leak with matches or a flame of any kind. Leaks should never be stopped with white lead or any oily substance but a small quantity of lead oxide mixed with glycerine should be used. In repairing a break in the hose, insert a piece of pipe and wire the hose to it, never using tape. Particular care should be taken to illustrate the working parts of



CUTTING THRU A STEEL BILLET WITH AN OXY-ACETYLENE CUTTING TORCH

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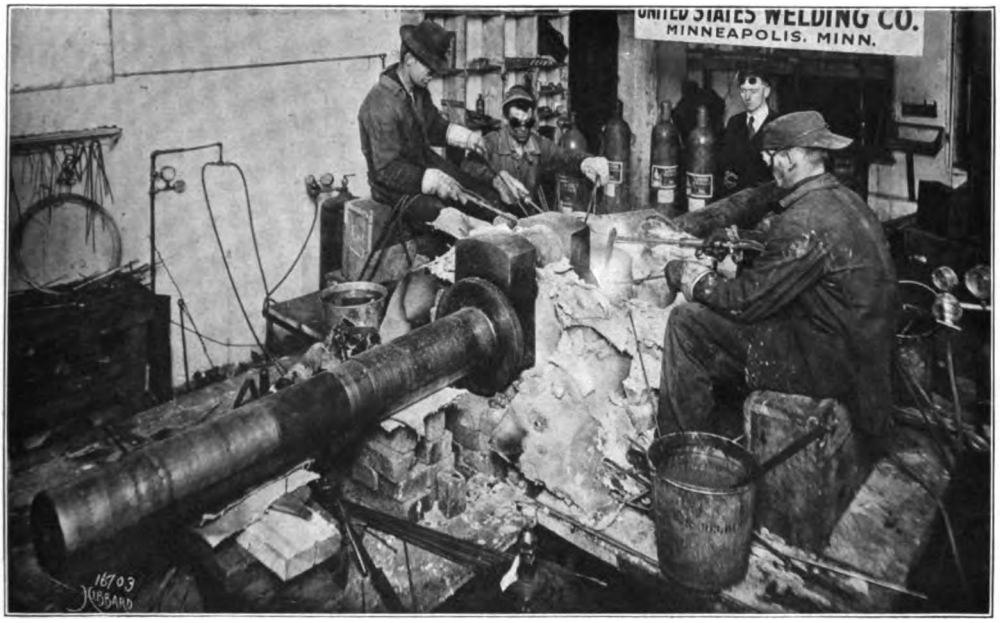
the gages, regulators and torches to the students and to point out the most common repairs which will be needed. Outside of these, the apparatus should be returned to the manufacturer for repairs.

Before the student can start welding in the shop, he must be able to readily recognize the material upon which he is working and must have clearly in mind a series of simple tests which he can apply to determine the nature of the work. The instructor should emphasize four simple ways of distinguishing between cast iron, malleable iron and steel; (*a*) by the cross-section of a fresh break, (*b*) by the application of the welding torch, (c) by the sparks given off when applied to the emery wheel and (*d*) by testing the edges with a chisel. These points should be brought out at the start of the lecture on cast iron. Simple line drawings on the blackboard to illustrate the method of preparation for welding are advisable, also a clear explanation of the reasons for the use of filler rods and flux and the component parts of each. The reasons for blow holes and hard spots in the weld should be analyzed and explained carefully to the student. While there may be a great many causes for these blow holes and hard spots, they can all be traced to a lack of heat. The most difficult problem of all for the student to grasp and conquer is the elimination of the effects of expansion and contraction in welding. The application of heat causes expansion in all commercial metals and cooling causes contraction. Theoretically these two forces should offset each other but practically they do not. If the student is to weld a bar whose ends are free to move the problem is comparatively simple, but if the ends of the bar are confined, the problem becomes very complex. When heat is applied to the break it heats a short section only, part of which is molten, therefore, the effect of expansion is confined to that small area. The metal has no strength when molten and the expansion is absorbed by the molten metal



FOURTEEN INCH STEEL CRANK SHAFT WELDED IN NINETEEN HOURS

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without any effect upon the rest of the bar, but when cooling and contraction starts, the heated section again has strength and the force of contraction has an effect upon the bar. This principle must be clearly understood before the student can understand his expansion and contraction problems and the best methods of eliminating them.

The most important point to bring out in the lecture on steel is the reasons for the forming of an oxide, the effects of this oxide on the weld and the methods used to eliminate the same. The effect of too much or too little heat in the welding of steel should be carefully analyzed and also how expansion and contraction effects this work.

The remaining subjects should be treated along the same general lines followed in the lectures briefly outlined above, and too much time and care cannot be spent in the preparation and delivery of these lectures. When the student steps into the shop his troubles begin. The first thing he should do is to set up his apparatus and test it out. Then a neutral flame should be secured and the difference between the neutral flame and either an oxidizing or a carbonizing flame carefully noted. To give the student a drill in torch practice use a small piece of sheet-metal, about 18 gage. He should weld two small pieces together without the use of filler rod and should be careful of his flame penetration and fusion.

Then work should start upon cast iron. It is preferable that all students have the same size bars which they should bevel off to the proper edge, line up on the table, and weld under the supervision of the instructor. When the weld has cooled it should be broken thru the weld and brought to the instructor who carefully examines the same, points out blow holes, hard spots and oxidation and the reason for the same with the best way to eliminate each. Each student should make enough test welds so that the instructor is perfectly satisfied that he can handle the fusion of the metal. After he has completed the test welds, he should be given an opportunity to work upon practical commercial articles, for in this way only can the student acquire

WELDED SHEET STEEL GASOLINE TANKS

a familiarity with real welding and confidence in his ability to handle the same. Do not use scrap, for the physcological effect of welding real material, which is again to be used, should not be eliminated. Several preheating problems or problems of expansion and contraction are necessary. Each student should be carefully marked not only upon each test weld but also upon his practical work.

Steel should be taken up in the same manner as cast iron but on account of its many difficulties will require much closer attention of the instructor to each individual student and also much closer application and headwork on the part of the student. After the test weld has been completed, several problems in sheet-metal welding should be taken up to bring out clearly its complex problems in contraction.

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The instructor should explain clearly why two sheets of cast iron will spread apart when being welded while two similar sheets of steel will overlap. A clear understanding of this point will aid the student materially in his practical work. Brass, malleable iron and aluminum should be taken in turn in the same manner.

In or near each welding school there is undoubtedly some industrial plant such as a foundry, machine shop, manufacturer or repair shop which has more or less welding to do. If approached in the right manner an arrangement can undoubtedly be made whereby the school should furnish the welding apparatus and labor and the firm furnish gas, welding material and the work. Such an arrangement is mutually beneficial.

In starting a welding course, the apparatus and equipment necessary is quite a problem. One welding table and one complete welding apparatus for each three students as a minimum, and individual welding goggles for each member of the class should be supplied. The tables may be made from angle iron and covered with firebrick. The making of such tables as well as preheating torches and individual portable trucks for gas cylinders by the students in the class is desirable, for they will undoubtedly have to do this same work in actual commercial shops. Each school installing such a course in welding is undoubtedly equipped with a complete machine shop including emery wheels, drills, vises, etc. An electric portable drill and grinder combined is very important and useful in the welding shop. A stock room should be maintained and all tools, apparatus, equipment and supplies kept in the same and checked out as needed to the student. Each student should set up and take down his apparatus. The following list as a minimum should cover the needs of a class of ten or fifteen men and for smaller or larger classes divide or multiply:

- 5 Medium-size Welding Torches
- 2 Large extension handle Welding Torches
- 7 Sets appropriate Welding Tips
- 5 Oxygen regulators (low pressure; two gages)
- 1 Oxygen regulator (high pressure; two gages)
- 6 Acetylene regulators (two gages)
- 12 10 ft. lengths of Welding Hose
- 2 20 ft. lengths of Welding Hose
- 1 Cutting Torch
- 1 Set tips for Cutting Torch
- 1 Carbon Removing Torch
- 100 lbs. 3/16"-½"-⅜" Cast Iron Welding Rods
- 100 lbs. ⅛"-3/16"-¼" Steel Welding Rods
- 25 lbs. 3/16" Tobin Bronze
- 10 lbs. ⅛" Brass Welding Wire
- 20 lbs. 3/16" Aluminum Welding Wire
- 25 lbs. Cast Iron Flux
- 10 lbs. Brass Flux
- 1 lb. Aluminum Flux
- 20 lbs. Retort Cement
- 100 lbs. ⅛" Asbestos Paper
- 1000 lbs. Charcoal
- 12 Gas Ignitors
- 2 Aluminum Files
- 10 sq. ft. 20 gage Rolled Sheet Copper
- 1000 St. Louis Star Firebrick
- 200 ft. 3/16"x1½" Angle Iron for Tables.

Suitable Oxygen and Acetylene gas contracts to insure sufficient supply and prompt delivery.

Even the Corporation School movement has now fully realized that the prime factor in efficiency in industry is not capital or stock but labor, and that the most economic of all changes now confronting the ever more differentiated lines of business is to get the right man in the right place, and that even improvements in machinery are not so much needed today as are improvements in labor and its conditions, so that the aptitudes and skills of each worker are utilized and the morale not only of each great line of industry, but of every great firm, should be developed and kept at its highest point.

—President G. Stanley Hall.

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SQUARING STOCK

E. E. ERICSON
Director Manual Arts, East Central State Normal, Ada, Oklahoma.

THE order of operations in the procedure known as "squaring stock" or "reducing stock" to required dimensions in schools where wood work is taught is usually the following:

1. Plane one face straight and smooth, etc.
2. Plane one edge straight and square, etc.
3. Plane one end true and square, etc.
4. Saw and plane to length.
5. Gage for width, and plane to the line.
6. Reduce to thickness.

In following out this method of squaring stock, however, the average boy has always had two, to him, extremely difficult operations to perform.

The first of these is to plane to length, pushing the plane a little more than one-half the distance across the end of the board a few times in one direction; then planing in the other direction a few times and repeating until the knife line is reached. In the beginning of a course in woodwork the pieces to be squared are usually small. Many a boy has ruined his piece of wood because he pushed his plane a little too far, thus splintering off the opposite edge.

The other trying problem for the beginner is to plane to thickness after all the other faces of the board have been finished. The board can not well be put in the vise for this operation since it will tend to warp and be thrown out of shape. In most cases the process involves the use of a scrap piece of wood between the end of the board and the bench stop in order not to scar the finished end. The difficulty here is that the piece that the boy is working on will tend to slide off the scrap piece and will very often either fall on the floor or be pushed directly against the bench stop before the work is done. Any teacher who has had experience in teaching this kind of work has seen his pupils labor hard at this operation, oftentimes without very satisfactory results.

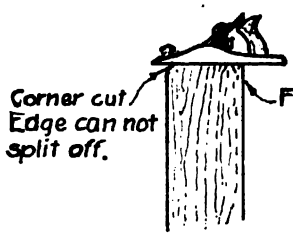

Fig. 2.
Planing to length. Step 5.

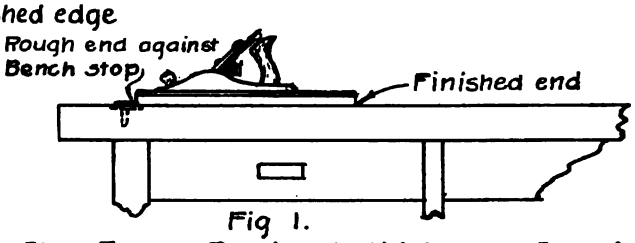

Fig 1.
Planing to thickness. Step 4.

For a number of years the writer has used a different order of operations in squaring stock. This method has been used both in grade work and high school work and has been found to be a great improvement over the order discussed above. The difference is largely in the last three steps of procedure. When this method is used, the board must be ¼" wider in the rough than the required dimension when finished. The directions are briefly as follows:

1. Place the board on the bench with one end against the bench stop and plane one side true and smooth. Mark 1 (working face).

2. Put the stock in the vise and plane one edge true and square to No. 1. Mark 2 (working edge).

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3. Cut off one corner opposite the working edge with a chisel; put the stock in the vise, and plane clear across the end. In planing, move the plane in the direction of the cut corner. Square the end to the working face and the working edge.

4. Gage for thickness, place the board on the bench with the rough end against the bench stop, and plane down to the line.

5. Mark for length, and draw a knife line on both sides of the board. Saw off the surplus wood, making the saw cut 1/16" away from the knife line. Now cut off the corner at the unfinished edge as in step No. 3. Put the stock in the vise and plane in the direction of the rough edge until the knife line is reached. A 45 degree cut ⅛" deep on the corner is sufficient to keep the edge from splintering if the plane is properly adjusted.

6. Gage the width, put the board in the vise and plane down to the line.

It will be noticed that in using this method, the order of operations are so chosen as to leave the waste stock on the end of the board until it has been planed to the required thickness; also that by cutting off the corner at the rough edge and finishing the end with a continuous shaving, the difficulty of planing in two directions is eliminated.

Anyone who cares to try out this method of squaring stock will no doubt find that it will cause the student less difficulty with his work, and also that it will enable him to turn out a neater product.

IS THIS A PROPHECY OR MERELY HISTORY?

BUILDING A TOOL HOUSE, 6TH N. S. S. CAMP, CHAUTAUQUA, N. Y.

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EDITORIAL REVIEW OF THE MONTH

NEED OF HIGHER TRAINING FOR THE ART INDUSTRIES

THE January number of the *American Magazine of Art* contains an article by the senior editor of the *Manual Training Magazine* in which he argues for a national school for the higher training of men in the art industries. He believes that just as there are graduate schools and special schools for training men in science and the professions, so there should be schools where a man may learn fine craftsmanship, and artistic manufacture. There ought to be a school or schools where instruction is so practical, so thoro, so infused with the spirit of the best modern art that a workman or a foreman or a designer in a furniture or textile factory or in a pottery or a printing establishment would find it profitable to go to this school for at least a short period, because there he would come under the instruction of the most skilled art workers of the Nation and carry back to the industry a higher standard, greater skill, and better methods of getting out work. During this reconstruction period following the war is just the time when the need of such a school is going to be felt in the industries where design and fine craftsmanship are vital factors. Moreover, now is the time to establish such a school, if this country is not to continue under the domination of Central Europe in manufactures involving art and skill.

A NATIONAL SCHOOL OF INDUSTRIAL ARTS

THE article above referred to proposes that there be established in the city of Washington, or elsewhere, a national school covering several groups of industries in which design in form and color is an important factor. This school should be to the art industries what post-graduate courses in the universities are to the professions. It would consist of a group of factories in the center of which is a working museum of industrial art. For instance, the group might consist of a factory for furniture making and interior decoration, a factory for textile work, a factory for ceramics, a factory for metalworking and a factory for printing and book making. Each of these should be a real factory turning out a limited but superior product by the best known methods. But the material product would be the secondary aim of each factory; the primary aim would be the education of the highest type of workmen and designers. Each factory building would therefore include classrooms, studios and research rooms for instruction purposes. The permanent faculty of the school should be supplemented by the best experts in the factories of the country who would be loaned to the school for a short period of time. In this way the school would gather to itself the best designers and most skilled workers, so that it could occupy a position of leadership among the industries. In fact the great advantage of such a plan would be that the school would be in the closest possible cooperation with the industries both on the material and personal sides. This would bridge the traditional, lamented gap between the art schools and the industries.

TEACHERS NEED HIGHER INDUSTRIAL ART TRAINING

BY NO means the least important service which such a national school of art could render the nation would be in providing special supplementary training for teachers. Do you know of a school in the United States where a man could spend six months of concentrated effort in

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learning the fine art of upholstery? We do not. And if anyone asks you where he can take a course covering the higher reaches of furniture design, where do you recommend that he go? Probably you end up by saying Paris or Berlin, but you ought to be able to say Washington or New York or Chicago. The same kind of question might be asked for a score or more—perhaps fifty special occupations in the art industries. What a stimulating and elevating effect it would have upon the manual arts instruction in the public schools if it were possible in this country to gain instruction in these higher industrial arts and skills, and if teachers were encouraged to fit themselves to raise their own standard of instruction! We have begun at the bottom of the ladder in our industrial training, but we have not yet supplied the upper extension. When that is done, we can see better in what respects the lower section needs strengthening.

DECORATIVE ARTS AND INDUSTRIES ASSOCIATION FORMED

ANOTHER evidence of the growing interest in the development of art as applied to industry is shown in a movement started recently in New York City. Its purpose is to encourage higher standards in home furnishings. The following account of the meeting for organization has been received from Dr. James P. Haney:

A number of the larger manufacturers of the country have just organized a National Association of Decorative Arts and Industries to raise national standards of taste in home furnishings. The organization meeting was held just before Thanksgiving in New York City, and in order to complete the organization immediately, officers were elected as follows: president, James P. Haney, director of art in the high schools of New York City; vice president, Henry W. Frohne, editor of *Good Furniture* magazine, Grand Rapids, Michigan; secretary, William Laurel Harris, of the Fine Arts Federation, New York City; treasurer, Chandler R. Clifford, editor of the *Upholsterer and Interior Decorator,* New York City. Those elected will hold office until the general meeting in the spring.

It was decided by the executive committee, to hold a general convention of the art industries in New York City early next year. This will bring together a large number of those interested in developing better taste in the home. At the same time it will be the purpose to secure a membership widely distributed thru the art trades, the important museums and art societies of the country. The society will carry forward its work and propaganda largely thru local organizations which will be affiliated with it.

Together with the officers, the following business men compose the executive committee: William H. Gay, Berkey & Gay Furniture Co., Grand Rapids; Henry Burn, president Robert Graves Co., wall paper manufacturers, New York; Henry W. Kent, secretary Metropolitan Museum of Art, New York; Nathan Ullman, president Ullman Manufacturing Co., picture frame manufacturers, New York; Horace B. Cheney, Cheney Bros., silk manufacturers, South Manchester, Conn.; George A. Bomann, president J. H. Thorp & Co., New York, upholstery and drapery fabric jobbers; John W. Snowden, president Stead & Miller Co., Philadelphia, manufacturers upholstery and drapery fabrics; C. Victor Twiss, interior decorator, New York; Mrs. John W. Alexander, Federation of Women's Clubs; Walter E. Rosenthal, sales agent of upholstery and drapery fabrics.

The constructive object of the society is to promote closer relations between manufacturers, jobbers and retailers of home furnishings thru the country by means of printed publicity, traveling exhibitions, lectures and trade and general information on furnishing the home. Thru the association, it is also planned to show exhibitions of good home furnishings in New York museums and in museums in Philadelphia, Boston, Chicago, Cleveland, Buffalo, Cincinnati, St. Louis, Detroit, and other cities.

Other exhibitions of upholstery and drapery fabrics, wall papers, carpets and rugs, framed pictures, laces, silverware, pottery and glassware, lighting fixtures and other home furnishings are to follow.

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PUTTING NEW LIFE INTO OLD SHOPS

AS IT is an ill wind that benefits no one, so it is a poor lot of newspaper clippings these days that reveals no signs of progress in manual training and industrial education. We were attracted to one that came the other day from Norwalk, Connecticut, because it seemed to carry with it the atmosphere of progress and practicality that we like to believe is characteristic of a large percentage of the manual arts work at the present time. We were attracted also by the proof it gave that a teacher with ideals and capacity for leadership is worth more than large appropriations for fine equipment, valuable as they undoubtedly are.

From the clipping above referred to it seems clear that John W. S. Hodgdon, director of manual arts in Norwalk, has shown one excellent way to put new life and virility into manual training work. He went to Norwalk a little more than a year ago to teach woodwork. He soon realized that other things besides woodwork should be taught there, and that the woodwork itself should take on a more practical character. With very little money available, but with some enthusiastic boys to help him, he secured gifts of many small tools for metalworking and even several gas engines.

Now, after a preliminary course in benchwork in wood, he is offering to the boys of Norwalk an opportunity to choose between woodworking and metalworking. If they select the former, they are taught to repair school furniture, build bicycle racks for the city schools, build chicken houses, make bulletin boards, show cases, etc. If they elect metalworking, they are given instruction in grinding and sharpening tools, including scissors, knives, axes, cold chisels, plane irons, etc., most of which tools are brought from home by the boys. They are taught to run a lathe, to cut threads on pipe, to drill and tap holes, to chip and file iron and to bend and cut sheet-metal. They take apart and assemble gasoline automobile engines; they clean out the carbon and grind valves; they take apart the carburetor and magneto; in fact, they make a study of the mechanism of the automobile, and learn how to make repairs.

Thus the formal course has been reduced to a minimum and supplemented by work of more immediately industrial value to the profit of the boys, the school and the community. Such work, however, requires a teacher who is a thoro mechanic, an effective organizer of teaching material as well as of workers, and a natural leader of boys. But, of course, that is the only kind of teacher that any school should have.

WORKING FOR A VOCATIONAL EDUCATION LAW IN ILLINOIS

THE state of Illinois is making another effort to pass a vocational education law. This time the parties interested are not so widely separated in their demands as two years ago, and certainly not so far a part as four years ago; yet there is enough difference of opinion to make the discussion interesting. Now that the question of a dual system is dead, and that everybody wants the Smith-Hughes money, it might seem that the details could easily be worked out, and perhaps they can, but at this writing, there is a division of opinion on some of the details of administration and some doubt as to the advisability of including compulsory continuation school work.

In general the line-up seems to be about as follows: The present school administrative officers of the state and many school superintendents and teachers want a law that will do nothing more than accept the conditions of the Smith-Hughes law, provide funds to duplicate the Federal funds,

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and make the present State Board for Vocational Education the permanent board. These people are willing to make a concession to the extent of adding three or four new members to the State Board.

On the other hand, the manual arts and vocational education teachers in the state, the Women's Legislative Congress, the representatives of organized labor, the merchants and the manufacturers are not satisfied with this program in the form it has been presented. They insist that the executive officer working under the State Board for Vocational Education should be an expert in vocational education and not the State Superintendent of Public Instruction. They would have the State Superintendent on the Board—in fact many would be glad to have him president of that board, but they say that the "irreducible minimum is a trained and experienced vocational education expert in charge of things at State headquarters."

These same people also demand that an advisory committee on vocational education shall assist the local school boards in carrying out the provisions of the law. They know too well the tendencies of school boards to fail to act on progressive measures. It is believed that such an advisory committee could help in this and that it would be a big factor in insuring real vocational training in the schools.

The third point contended for by this latter group is that whenever a school district provides continuation school work under the Smith-Hughes law the employers of all children between 14 and 16 years of age in that district should release the children for 8 hours each week to attend such school, and without loss of pay, and that the children so released from work must attend the school. It is contended that this is a very modest demand, that what really should be done is to make the age limit 18 instead of 16.

It is to be hoped that the school superintendents will see a new light and accept the views of the other group, so as to avoid violent differences of opinion which might defeat the whole vocational program.

The financial difference between the two groups seems to be merely the salary of the vocational expert who would become the state executive officer, but this does not represent the real difference. The real difference is between a genuinely progressive administration conducted by an expert or, on the other hand, a half-hearted, hesitating administration by sufferance. The state of Illinois cannot afford to play any longer with this matter.

THE WORK OF THE JUNIOR RED CROSS

GREAT credit is due the Junior Red Cross for their activities during the war. No other agency was so effective in making sure a high standard of morale among the children. Everybody doing something to help—children as well as grown-ups—was what made us a united nation during the war. Even if the help of the children were to be disregarded as an economic factor in the war—which it cannot be, we believe—it surely cannot be disregarded as a psychological factor. And looking to the future, who can estimate the value of this experience in retrospect, even tho it were only knitting a bag or nailing a box? It was doing "a bit."

The following paragraphs sent to us from the National headquarters of the Red Cross suggest the extent of one section of the Junior Red Cross work and its commendable spirit:—

Vines did not grow over school house windows last summer, because they were opened wide to admit light and air for the members of the Junior Red Cross who were hammering and sewing and knitting. Hundreds of teachers volunteered their time to direct the work, and the results were tremendous. In the Pacific Division, furniture for four Red Cross

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Convalescent Houses, comprising about 800 pieces, was turned out.

The opening of the School year brought new opportunities. An allotment of 240,212 articles for the Field Medical Supply Depot of the United States Army was issued, for delivery December 1st. This order consisted of chests for packing table ware, cooking utensils, and laboratory equipment, ambulance boxes, bread boards, bedside tables and coaptation splints. Each article is marked with a red cross and the larger ones with the name of the school where they were made. Every detail had to be perfect, up to the Red Cross standard.

This new task for the Junior carpentry corps is a recognition of the ability and zeal for winning the war shown by little brothers as well as big. It is an acknowledgment of the productive efficiency of well directed patriotic endeavor in the schoolroom.

The seriousness with which the children undertook the job is attested by the following anecdote. A manual training supervisor in a Middle Western school one day stepped upon a pile of new lumber. "You have committed a sacrilege," the instructor in charge announced to him. As he failed to comprehend, the instructor explained "Those boards you stepped on were sacred. They're going to be made into Red Cross furniture. My boys *wash their hands* before they handle them."

A SHOE-REPAIRING COURSE NEEDED

ANOTHER industry is calling upon the schools for help. Shoe repairing has long been a steady and well-paid occupation, but even before the war there was a scarcity of efficient shoe repairers. Like other machine trades that have evolved from hand trades, shoe repairing has not trained men enough to keep up its own supply, not to mention its standard of skill. The following resolutions adopted at the annual convention of the National Leather and Shoe Finders' Association at Pittsburgh in June, 1918 tells the story:

Whereas, The accute scarcity of shoes and leather in the world today, and the decreasing cattle supply caused by war demands will make it an economic necessity for years to come, to conserve leather as we have not done heretofore, and,

Whereas, The growing scarcity of skilled workmen to meet the increasing demand for high-class shoe repairing, causes us to appreciate the responsibility we owe the public to assist in this needed economy to our twenty millions or more families in the United States, and,

Whereas, It would train for a vocation, with increasing opportunities, steady, intelligent young men, with small capital, therefore be it

Resolved, That the National Leather and Shoe Finders' Association, officially and in every way possible, thru its group memberships, bring persistently to the attention of all manual training and trade schools thruout the country, *the importance of adding a repairing course,* where not already started.

CURATIVE SHOPWORK IN GOVERNMENT HOSPITALS

THE recent report of Major A. C. Monahan of the Surgeon General's office on "Curative Workshop Schedule and Other Educational Work in the Hospitals" gives facts of interest. First, we notice that the purpose of such work is stated to be as follows:

1. Bedside occupations to take the patient's attention from his disability and occupy his mind—at first diversional and entertaining but becoming definitely of vocational, economic or social value.

2. Ward, shop or farm occupations to give complete functional restoration either physical or mental.

3. Ward, classroom or farm operations and study to occupy the patient's time in worth-while work and thus develop in him a good mental attitude toward his disability, his treatment, and the hospital.

4. Ward, classroom or farm operations and study in preparation for re-education for those entitled to re-education under the Federal Board for Vocational Education.

Second, we learn that on November 15th there were approximately 4800 different patients in curative workshop and other educational activities, or about 36% of the patients in the military hospitals. The aggregate enrollment by subjects as follows:

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Bedside and ward handicrafts	990
Bedside and ward academic study	610
Shopwork, industrial arts, etc	1230
Agricultural work	1000
Commercial work, bookkeeping, stenography	920
Academic subjects	1540
Curative games and exercises	1310
Total	7600

GEORGE J. LOEWY ELECTED DIRECTOR OF THE BUREAU OF VOCATIONAL ACTIVITIES

ONE of the first recommendations made by Superintendent W. L. Ettinger after his election as superintendent of schools of New York City was that a bureau of vocational activities be established. As a result of the recommendation the following by-law was adopted by the School Committee June 5, 1918.

Sec. 41a. 1. Under the supervision and direction of the superintendent of schools, the Director of Vocational Activities shall have charge of the Bureau of Vocational Activities, and shall prescribe the duties to be performed by all persons employed in the said Bureau.

2. The Director of Vocational Activities shall have direction and supervision of all technical, vocational, prevocational, industrial and manual training subjects.

3. No person shall be eligible for election as Director of Vocational Activities who does not hold a degree in engineering granted by a college or university recognized by the University of the State of New York, together with ten years of satisfactory experience in teaching or supervision, provided not less than three years of such experience shall have been spent in supervising or teaching vocational classes.

The board of superintendents nominated and the school board appointed George J. Loewy, principal of the Murray Hill Vocational School and principal of the Brooklyn Vocational School, director of the Bureau of Vocational Activities. Mr. Loewy by both professional training and experience is eminently qualified to assume leadership of all phases of vocational work. He was born in New York City, Feb. 19, 1874, and was educated in the public schools and the City College of New York. He received his engineering education at Stevens Institute of Technology, receiving the degree of Mechanical Engineer in 1897. After graduating, he occupied a number of responsible positions in various trades and engineering lines. During the fall of 1899 he entered the public school system of New York as instructor in Public School No. 147, Manhattan.

GEORGE J. LOEWY

After eight years experience in the elementary schools, he was appointed instructor in the Bryant High School in 1907. In addition he also taught in the East Side Evening High School, 1901-1903. The board of education selected Mr. Loewy in December, 1908, to make a special study of industrial education in Europe. While teaching he studied and took postgraduate courses at Columbia University and various other institutions and studied industrial education in Europe during the summers of 1905 and 1906.

Mr. Loewy was appointed principal of Murray Hill Vocational School in 1914 and later was made principal of the Brooklyn Vocational School in 1915, both of which he has organized. While he was

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principal of the vocational school, he organized and equipped the complete provocational school centers of New York City, acting as the technical expert to Dr. W. L. Ettinger. He is a member of the following professional societies and associations: American Society of Mechanical Engineers, Stevens Institute of Technology Alumni Association, and the College of the City of New York Association.

A STRUGGLE FOR MORE LIGHT

THE following communication tells a story full of reality and color, some in darker shades and some lighter. If it reveals conditions that are typical it ought to stimulate thought concerning factory conditions and the opportunity of the vocational teacher to help in improving them. To be sure, it reveals conditions beyond the power of the teacher to remedy, and very likely beyond the power of the owner of the factory to remedy entirely. These conditions go farther back into our industrial system, but the vocational teacher, working in the modern spirit, together with the cooperation of the intelligent factory manager can do much to better conditions. To get the habit of changing from job to job is dangerous, but to be content or afraid to change is probably more dangerous. The education of the worker while in his job, with reasonable rewards for increased efficiency, and a vision of something worth while ahead,—these should make frequent changes unnecessary. And we must not forget the vision, the opportunity, the morale. Man does not live by bread alone, neither by cash; hope is still the mainspring of life.

My dear Mr. Bennett:

Indiana University thru its vocational education department is conducting trade and industrial teacher-training courses in different cities in Indiana. It reaches men who are in the trades in the different localities who want to become teachers in State and Federal-aided vocational schools.

In one of the classes meeting in Indianapolis recently, students were asked to write out their experiences of the last few years which have had an influence upon their present industrial work and their immediate outlook. Many of these letters were of unusual interest in pointing out conditions in industry with which the ambitious young mechanic has to contend. The letters show strongly the need for more attention to industrial education. They also suggest the need for a different attitude on the part of some manufacturers toward the men in their employ and their opportunities for advancement.

I am enclosing one of these letters by Mr. R. E. Singleton of Indianapolis, with the thought that your readers may be interested in a point of view which is quite common among workmen. It is easier to state the need than to find a solution but I am of the opinion that there should be a larger attention given to definite trade instruction within industrial plants themselves and a very considerable development of different kinds of vocational instruction under public control, and also adequate attention to the training of suitable vocational teachers for such institutions. The letter follows.

Very truly yours,

G. F. BUXTON.

Five years ago I was working in the motor assembly in one of the largest automobile factories in Indianapolis. I had been there about a year at that time and worked there about two years and three months longer. During this time I climbed by the slow evolution which prevailed in shops at that time from bench work to motor builder.

All around me I saw men who had been working there for years and years. These fellows had been at the same old grind so long that they knew nothing else and would have been afraid to quit even if they had been offered a much better job. To go out and look for a better job was something they sometimes dreamed about but very seldom, if ever, did.

One day I heard the employment man tell a visitor that there were eighteen men in one of the departments who had been with the firm for over twenty years. I knew some of these men were not rated any higher than I was, and I began to imagine myself still working there at their age. This was a terrifying thing to think of and the

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question that presented itself immediately was, When was I going to get away? Jobs were much scarcer than men at that time, and a change was a big proposition. I was already working on as good a job as there was in the department, outside of a foremanship, and had had a try at practically all the work in the assembly line, and I realized that the only thing I could gain by staying might be a little more money, but a very little at the best.

Then one noon hour an acquaintance from another shop hunted me up to ask if I would consider a change, as he was going to quit, and his foreman had asked him to get a man to take his place. Then I found that I was already pretty deep in the rut and altho I finally decided to make the change it was one of the hardest decisions I ever had to make. Since then I have made several changes and each time it comes easier and it is easier to get accustomed to the new work. A change always has to mean an advance in wages or a better class of work.

One change I made from factory work to a service station meant a drop of several dollars a week in wages, but the experience was worth more than that to me. Altho I had a few doubts about making good on this particular job at the start, by the time I left this place I felt that I could make good on any job in that line.

While at the service station I became acquainted with a Chicago man in the general brokerage business, and after going out of town and getting him out of the ditch a couple of times, he hired me to drive for him. He covered several states in this part of the country and I had a good chance to see how he handled business transactions with big men and every day I recognized more clearly the wide chasm that divided his class of work and my own. He was one of the best informed men on current events, as well as any other subject that might be under discussion, that I have ever met.

Up to this time my knowledge of what was going on in the world consisted mostly of a glance at the headlines in the newspapers now and then, and if I made a statement I never had anything definite to back it up with. His greater knowledge on every subject created a desire in me to become better informed on what was going on in the world.

I had been with him only a few months when I felt that I should be at some essential war work; so I left him the day before Christmas 1917, and the first of the year went to work at ———— Company's Aviation plant. While here I had a chance to get on the inspection force a time or two, but was so disgusted with the methods of some of the executive force and officials that I did not take advantage of it.

About this time I was notified that there was a place open at one of the training detachments, and I was see-sawing over this and the chance to take an assistant foremanship at the factory. This is a step above the hammer and wrench, but it is a case of being between the frying pan and the fire, for when anything goes wrong the assistant foreman or straw boss generally has to bear the brunt of the trouble, both from the men and the officials higher up.

Having worked at the automobile trade for about eight years I felt confident that I was able to tell the soldiers at least a few things that beginners ought to know, and as instructing was a chance to get away from the shop, I immediately took advantage of the opening.

After I became familiar with the work I felt confident that I was getting about as good results as the average instructor, but I became convinced more and more every day that there was a great chance of improvement in the average instructor. This induced me to take advantage of the night school for vocational instructors and although, on account of the close of the war, the Chamber of Commerce has found it necessary since then to dispense with the services of a number of us, I intend to keep up the work unless something prevents.

NOW that Viscount Northcliffe's committee foresees that within a short time business men will use airplanes in doing errands, and that it will soon become common experience for a salesman to fly 400 or 500 miles to see a customer, returning to his home the same day, it may not be out of place to add the airplane school to the tractor school and the automobile school. If, as the report prophesies, light and perishable goods and fruits are soon to be sent to market by airplane, why not be forehanded and introduce airplane construction and repair into every up-to-the-minute high school at once? At least, it would serve to advertise the school.

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WASHINGTON CORRESPONDENCE

REDUCTION IN GOVERNMENT FORCES

SINCE the signing of the armistice many persons have undertaken to estimate the rapidity with which the number of civilian employes of the government in Washington would be reduced. There has naturally been a great deal of curiosity on this subject here at the Capital. During the past month it was announced for the War Department that the force of civilian employes, numbering approximately 30,000 on December 1, would be rapidly reduced so as not to exceed 3,000 or 4,000 on July 1, 1919. If other Departments adopted a similar policy it was assumed that a considerable exodus of war workers would take place during December.

The first definite figures that I have seen were compiled by the housing and health division of the War Department during the last few days of December. These figures show that from the date of the signing of the armistice to December 21 there were 8,096 separations from the service, but that during the same period there have been added 6,473 employes, making the net reduction only 1,623. It has been stated, in explanation of these figures, that a number of government agencies, such as the Bureau of War Risk Insurance in the Treasury Department, have been obliged to make large additions to their staffs in order to take care of the business, and these additions have served to offset reductions elsewhere.

DEFINITE FIGURES SOON AVAILABLE

DEFINITE and complete figures on this interesting situation will be available thru the operation of the resolution recently adopted by the Senate, effective January 1, in accordance with which the heads of all executive departments are required to make bi-weekly reports to the Senate of the total number of civilian employes in each department and the number discharged during the previous two weeks. In addition, the War and Navy Departments are to make similar reports on officers and enlisted men in service. The first of these reports is due January 14, so that from this date it will be possible to know quite accurately what progress is being made in reducing the government forces from a war to a peace basis.

FEDERAL BOARD FOR VOCATIONAL EDUCATION

AS suggested in these columns last month, the Federal Board for Vocational Education is one agency which is expanding rather than reducing its personnel. The staff required for the conduct of the work under the Smith-Sears Act, for example, is still incomplete.

EXAMINATIONS ANNOUNCED

THE eligible lists resulting from the examinations held last summer have been exhausted, and the United States Civil Service Commission has been obliged to announce other examinations, closing February 4. The examinations relate to the following positions: Chief, Smith-Sears Division, $5,000; District Vocational Officer, $2,500-$4,000; Supervisor for Placement and Training, $2,500-$4,000; Vocational Advisor, $2,500-$3,600; Placement Officer, $2,500-$3,600. Eligible lists are desired, from which to fill one vacancy in the position first mentioned, and several vacancies in each of the others.

The details are fully set forth in Circular 7 of the U. S. Civil Service Commission which may be had upon application. Candidates should apply for Form 2118, stating the title of the examination desired.

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EMPLOYMENT MANAGEMENT

UNDER a staff organized as the Employment Management Section of the War Industries Board, there was developed during the past year a system of war emergency courses for the training of employment managers. An advisory committee was created thru the cooperation of a number of departments at Washington, including War, Navy, Labor, War Industries Board, and U. S. Shipping Board, and the Chamber of Commerce of the United States. Courses have been established at points where universities and the industries can cooperate effectively, such as Boston, New York, Rochester, Pittsburgh, Cincinnati, Seattle, and Berkeley.

The purposes of the movement include: provision for better personnel supervision, reduction in labor turn-over thru more efficient selection and placement of employes, and improvement in employment conditions. The course of study deals chiefly with the subject of employment management, with some attention given to statistics, labor economics, and business organization and management. The main topics treated are as follows: Organization and equipment of an employment department; Employing the worker; Training the worker; Paying the worker; Control of working conditions; Efforts to keep the worker up to standard; The government of the shop.

With the dissolution of the War Industries Board on January 1, the question arose as to the future of this work. President Wilson was so impressed by its importance, and by the results already accomplished, that he issued an order providing for its continuance, and transfer to the Federal Board for Vocational Education. For its maintenance the President has allotted to the Federal Board, from his special war emergency fund, the sum of $25,000 for the remainder of the fiscal year.

THE SMITH-BANKHEAD BILL

A BILL sponsored by Senator Hoke Smith and Representative Bankhead proposes the establishment of a federal plan for the "vocational rehabilitation of persons disabled in industry or otherwise and their return to civil employment." The bill carries appropriations reaching $1,000,000 in 1921, and annually thereafter, for distribution among the states, and $200,000 annually for administration and expenses of studies and investigations.

The provisions of the bill follow in part those of the Smith-Hughes Act, and in part those of the Smith-Sears Act. It provides that administration shall be centered in the Federal Board for Vocational Education. Public hearings have been held, and there appears to be considerable demand for the enactment of this measure. I am of the opinion, however, that favorable action cannot be expected at the present session of Congress.

SMITH-HUGHES ACTIVITIES

IT IS announced that the vocational education plans under the Smith-Hughes Act of all of the forty-eight states have been passed upon and approved by the Federal Board, and the amounts due each state for the fiscal year ending June 30, 1919, have been certified to the Secretary of the Treasury. A circular containing the figures in detail may be had upon application to the Board.

The resignation of Charles A. Greathouse, member of the Board, has been announced. The reason assigned is pressure of private business interests. James P. Munroe, member of the Board, has recently returned to Washington from an extended trip to the Pacific Coast and other western states. Much valuable information, and many important suggestions as to

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the activities of the Board, were secured by Mr. Munroe.

SURGEON-GENERAL'S OFFICE

THE estimates as to the size of the task of the Surgeon-General's Office have been modified somewhat by the revised casualty lists from overseas. The limits of the task are fairly well defined, however, and the organization is being rapidly adjusted accordingly.

RESIGNATIONS

DURING December Dean L. D. Coffman, who succeeded Dean Russell as educational director, concluded his work here, and has returned to his duties at the University of Minnesota. Major M. W. Murray has resigned also, and returned to his position as director of industrial education, Newtonville, Mass., Technical High School.

Major Dean hopes to return to Teachers College for the opening of the second semester. Major Haggerty will probably be released in March, and Major Monahan somewhat later. Practically the entire Washington office, concerned with educational activities in hospitals, will be disbanded by July 1.

EDUCATIONAL WORK

MAJOR HAGGERTY showed me the figures which he was getting together for his report as of January 1. On this date educational work was being carried on in 15 hospitals, with a teaching staff of 475 persons. Approximately 3,700 men, or 31 per cent of all hospital patients, were enrolled in some form of instruction during the month of November. Curiously enough, the largest single group consisted of pulmonary-tuberculosis patients.

Major A. R. Crane, president of the State Normal School, Minot, N. Dak., now in Washington on leave, is at work on the preparation of a series of lesson manuals for instructors and students in the hospitals. Two special difficulties are encountered by the staff in conducting this work: (1) The patients in the hospitals are constantly coming and going; the average length of stay is short, and hence the individual student cannot be counted upon to remain under instruction for more than a brief period; (2) It has been very difficult to secure skilled teachers; a great variety of lines of work must be carried on, and many of these must be taught by amateurs.

Consequently it was decided to issue a series of outlines in short unit courses, in the form of lessons having some of the features of extension or correspondence courses. The attempt is made to provide for individual study and progress and to make the most of such teachers as may be available. Approximately 60 of these manuals were ready for the printer when the armistice was signed. It is expected that these will be carried thru the press and made available in limited editions.

COMMITTEE ON EDUCATION AND SPECIAL TRAINING

AT THE height of its activities the Committee on Education and Special Training of the War Department occupied offices in four different places in Washington: In the State, War, and Navy Building, and the Mills Building, across the street at 17th and Pennsylvania Avenue; in the Old General Land Office Building, and the Ledroit Building, across the street at 8th and F. On January 1 the offices in the last two buildings were vacated, and the Washington forces reduced accordingly.

The members of the Advisory Committee have resigned and returned to their former civilian positions, except Dr. Mann, chairman, and Dr. Capen, representative of

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the Bureau of Education. Mr. Timbie, in charge of preparation of course of study outlines and text material, has left, and Mr. Dooley, director of the vocational units, expects to get away within a week or two. The district educational directors have filed their final reports and have been discharged from the service.

RESERVE OFFICERS TRAINING CORPS

WITH the demobilization of the Students' Army Training Corps, the colleges of the United States will not give up their connection with military training, but instead will turn their attention to the Reserve Officers' Training Corps. Before the war there were about 115 units of the R. O. T. C. in colleges. About 100 of these are now being reestablished, and applications have been received for about 200 new units. Hence something like three-fifths of the 500 institutions in the S. A. T. C. will start at once with units of the R. O. T. C.

One important change in the organization of the R. O. T. C. is now being worked out. This change in regulations will allow the units to specialize in training officer material for the various corps of the army, such as Field Artillery, Engineer, Signal, Coast Artillery, Ordnance, Medical, and Military Aeronautics, instead of the uniform training for the infantry which was the rule before the war.

JUNIOR UNITS IN HIGH SCHOOLS

IN addition to the collegiate units, plans are now under way to establish Junior Units in secondary schools. City High School Corps are already established in Boston, Chicago, Denver, and a number of other cities.

The administration of the R. O. T. C. has been placed in the hands of the Committee on Education and Special Training, which operates under the Training and Instruction Branch of the War Plans Division of the General Staff.

IN FOREIGN COUNTRIES

A VOCATIONAL school has recently been opened in Shanghai, China. Three courses are given: metalwork, woodwork and button-making, the latter to meet a local need. Courses in leather work and needlework will be opened later.

THE President of Brazil approved on June 12 the regulations drawn up by the minister of agriculture, industry and commerce for the establishment of manual training schools, maintained by the Federal Government, in every state of the Republic and in the Federal District, according to Vice Consul Momsen, at Rio de Janeiro.

Each school is to have five workshops, equipped in accordance with the prevailing industries of the district. The normal period of training will be four years, students being admitted between the ages of 10 and 16.—*School Life.*

TRAINING BRITISH WOMEN FOR WAR INDUSTRIES

A BULLETIN entitled *British Methods of Training Workers in War Industries* has been issued by the Training and Dilution Service Section of the U. S. Department of Labor. From this bulletin the following facts are taken: Five instructional factories operated by the British Ministry of Munitions turned out 800 operatives every six weeks. Most of these became instructors. The technical schools operating in conjunction provided 500 a week. But the vestibule training

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departments of the factories, with the co-operation of the trade unions, trained more than ten times as many as all the Government agencies together.

The scheme of training semi-skilled workers in the technical schools was especially encouraged by the Government. No rigid regulations were laid down, but emphasis was placed on the fact that the training must be thoroly practical. "Purely educational ideals" were to give place to utilitarian methods. For example, bench-work was reduced to a minimum in order to give more experience on the machines. To impart "machine sense" was regarded as of primary importance. The fact of the report that will be most striking to American readers is that most of the workers trained for the munition plants were women. It is surprising to see to what extent women took the place of the men in machine shops. One shop reported that all the milling was done by women, more than half of the turning and most of the grinding. In tool room work in the making of optical munitions and in electrical work women were especially effective as operators.

An exhibition of women's work in Birmingham showed what was being done in the training schools. This covered the productions of women in training from a few days, in which they had done simple jobs on a plain milling machine, up to four or five months which was found to be sufficient time in which to enable suitable pupils to do gage work to the very closest limits of accuracy and in which the pupils set the tools for the work. A typical example of what was regarded as the average results usually sought was a small jack screw made in eight hours, after six weeks of training. Gages were shown which had been finished to .0002 inch by girls who had been trained for only two or three months.

CONTINUATION SCHOOL WORK AT YORK

ENGLISH educators interested in industrial education are looking forward to the application of the Fisher Bill providing for a gradual increase in the educational requirements for boys and girls who have entered industry, but American readers may be interested in a report of continuation school work done at York before the war. We refer to classes for juvenile workers at the works of Rowntree & Co., manufacturers of cocoa. The following is quoted from a report sent by a London correspondent:

The school is on the works premises. The teacher was given an entirely free hand in classifying pupils and grading of mental ability, so that the classes were as homogeneous as possible. Daytime classes were arranged for about 300 boys and about 1,200 girls. The boys were withdrawn from work for four hours a week up to the age of 17, and the girls three hours a week for three years. The school hours synchronize with the factory hours, so that the lessons begin at 7:30 in the morning, last until noon, start again at 1, and finish at 5 P. M. Each boy was required to attend for two hours on one evening a week in his own time, but on the recommendation of the teachers, in view of the greatly diminished value of mental effort after working hours, these evening classes will not be restored after the war. No teacher is on duty during the whole of the day. In the boys' classes each lad spent his six hours as follows: Gymnastics, two hours; mathematics, one hour; English, one hour; woodwork, two hours. The last named gives place in the second and third year of attendance to experimental science, two hours.

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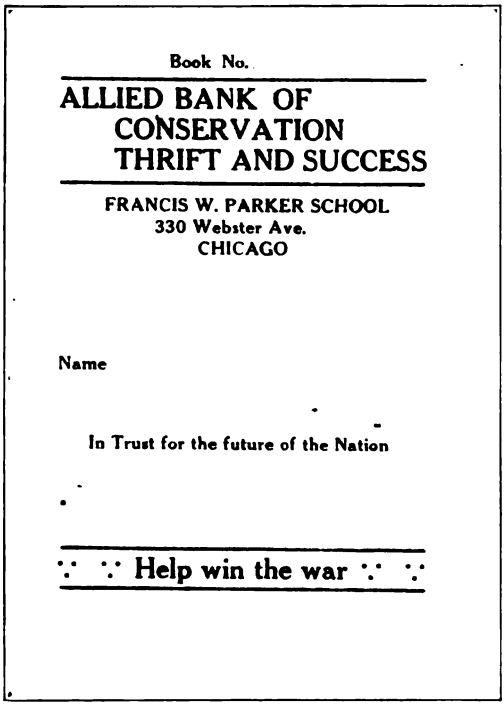
SHOP NOTES AND PROBLEMS

ALBERT F. SIEPERT, *Editor*

WAR CONSERVATION

LAST June when the school year for the pupils of the Francis W. Parker School was drawing to a close, a big patriotic meeting was held. At this meeting, which was attended by all the pupils from the kindergarten tots up to the seniors in the high school, the subject of conservation as a means of helping win the war was discussed. Short talks were given by members of the faculty, emphasizing the manner in which each and every member of the school could aid Uncle Sam during the summer vacation. The great quantity of supplies of every description which would be necessary to keep each soldier of our army on the fighting line in France, and in good trim, was pointed out. This meant taxing our productive forces to the utmost and it was especially urged that the strictest economy in the matter of food, clothing and shoes be practiced. Unnecessary extravagance along this line would mean reducing the amount available for our soldiers and allies.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Help win the war

BANK BOOK

Pledges which the pupils in the printing class had printed were distributed, and pupils were asked to sign these, believing that this would give conscious moral aid to each individual in his endeavor to help. When the pledges were handed in each pupil was accepted as a depositor in the "Allied Bank of Conservation, Thrift and Success" and was given a registered and numbered bank book. These bank books were also the product of the printing department. This bank book had pages for entering, not sums of money, but such items as "time spent in War Gardens," "Material salvaged from waste products," "products harvested from war gardens," "time devoted to helping or replacing adult labor," with a view to freeing the time of adults for such war work as the immature pupil could not do. Other pages were headed, "Time devoted to war work," "Red Cross," "Assistance given to Home Charities and Welfare Work," "Designed to help Hoover." Another page was devoted to recording a list of substitute dishes, previously disliked, for which a taste had been cultivated.

The eagerness with which the pupils entered into the scheme gave assurance of its success.

—L. W. WAHLSTROM.

DRESSING TABLE AND DESK OPEN AS A DESK

COMBINATION DRESSING TABLE AND DESK

This piece of furniture is designed to serve either as a desk or a dressing table, and meets the condition in a satisfactory manner. The photographs and drawings show both the construc-

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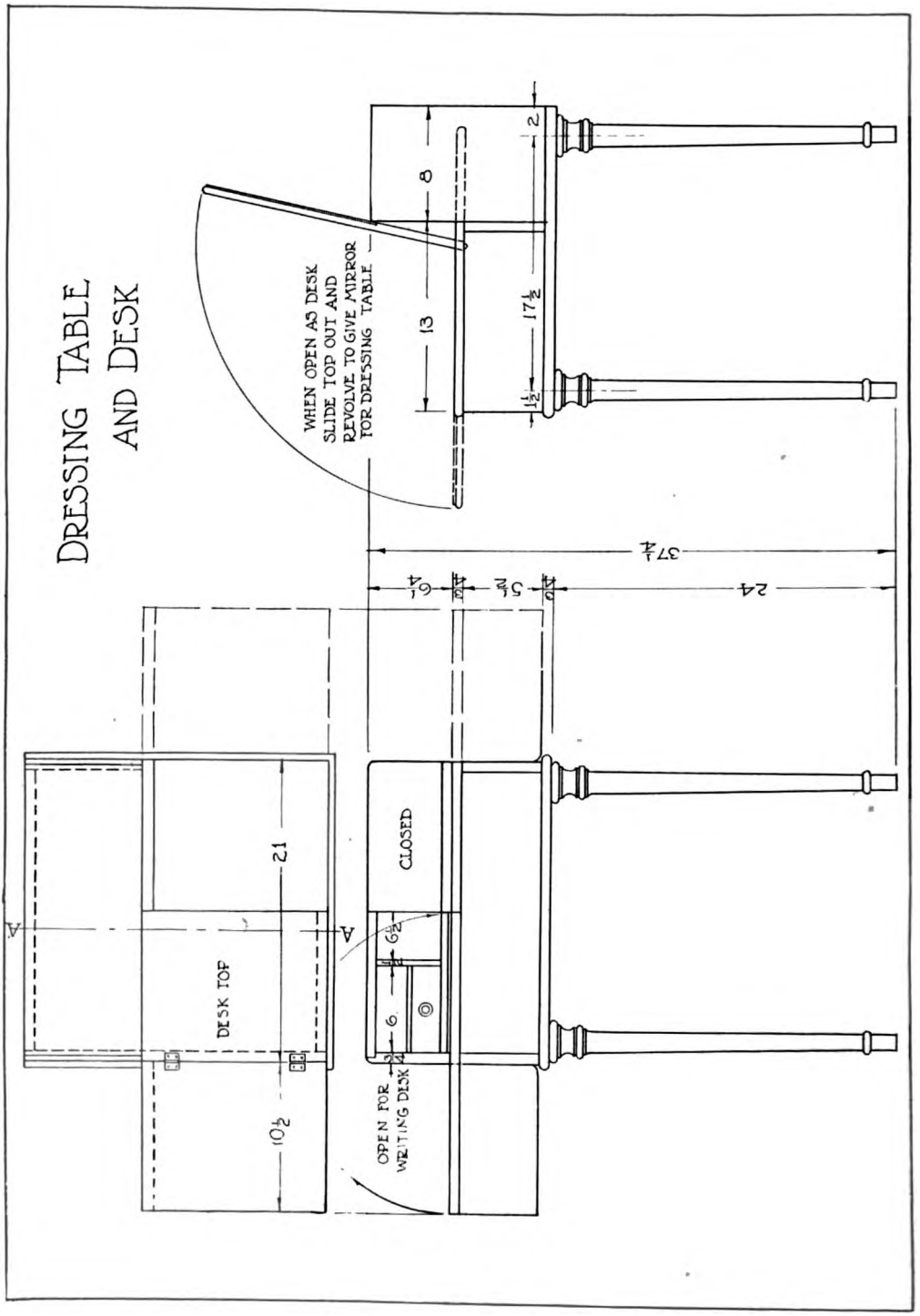

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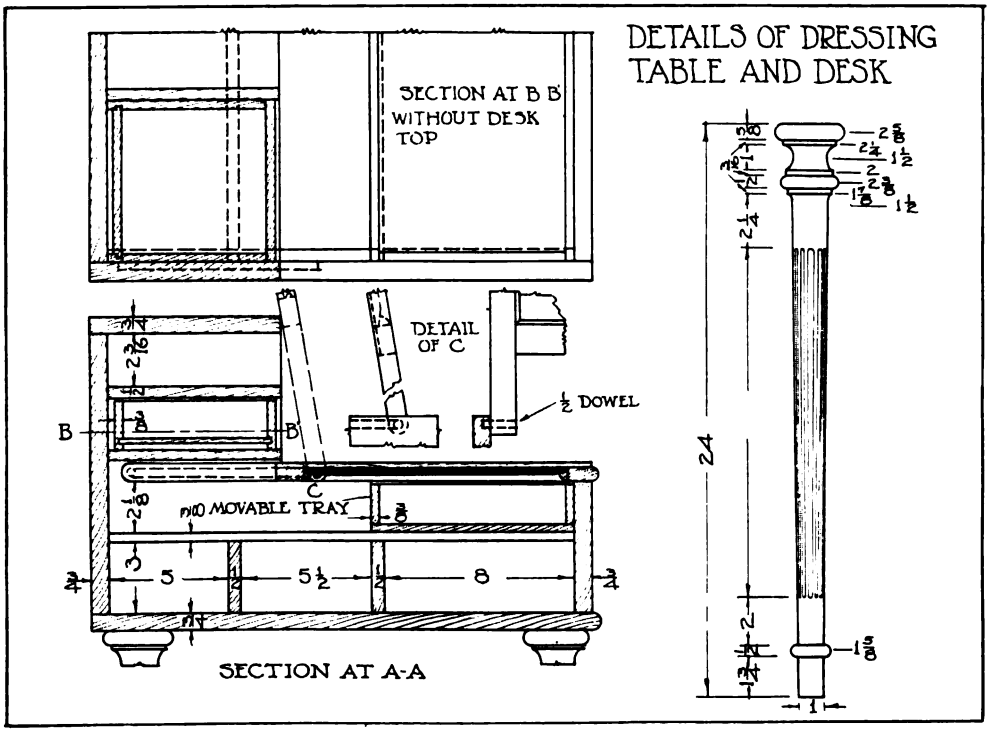
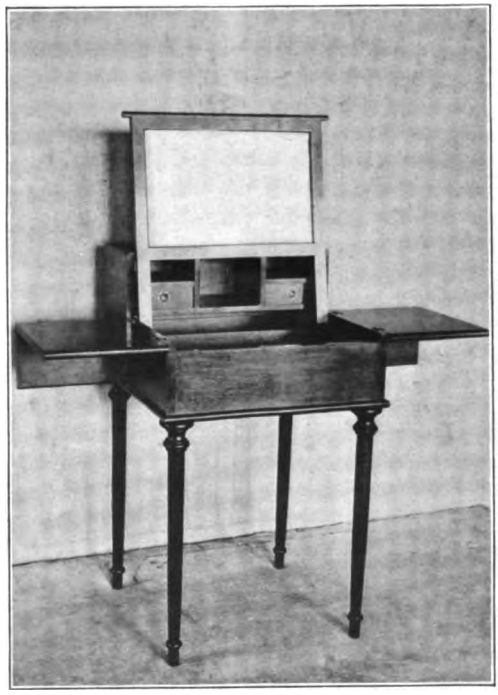


DRESSING TABLE AND DESK CLOSED



DRESSING TABLE AND DESK IN USE AS A DRESSING TABLE

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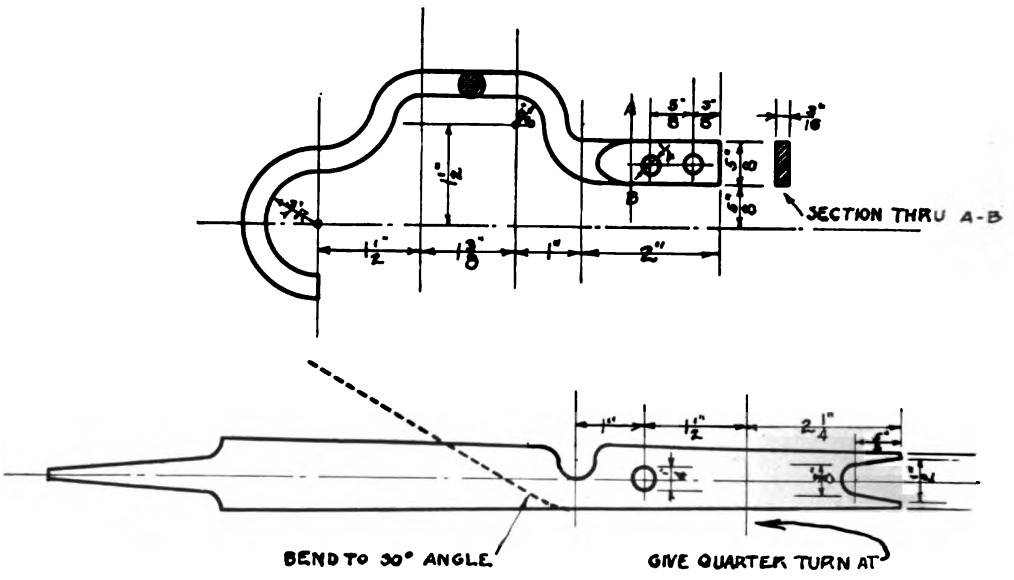
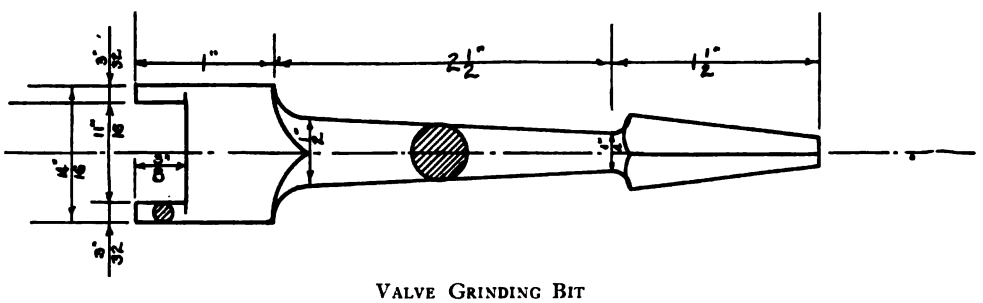


VALVE SPRING LIFTER



VALVE GRINDING BIT

tion and use of the project. Careful workmanship is essential thruout, especially in fitting the doors and desk top. Any good cabinet wood may be used. The photograph shows walnut as the material. The piece was designed and made by Jacob Rindsberg, of Cincinnati, in the classes for furniture design and furniture making at Bradley Institute.

FORGING PROJECTS

The Valve Spring Lifter is designed for use on a Ford engine. The two parts are made of ⅜"×9½" round iron and an old 10" flat file. The two pieces are held together with a ¼" machine screw, or a bolt and nut.

The valve grinding bit is also made of an old file, and is intended to be used in a brace for grinding Ford valves.

—PAUL T. WELLES,
Riverdale, Cal.

REPAIRING CHAIR SEATS

The photographs show several varieties of chair repairing undertaken by boys of the Washington School, Waterloo, Iowa. The four cane bottomed chairs were both refinished and caned by the same class while the others were provided with hickory splint seats.

—GODFREY MESSER,
Principal Washington School,
Waterloo, Iowa.

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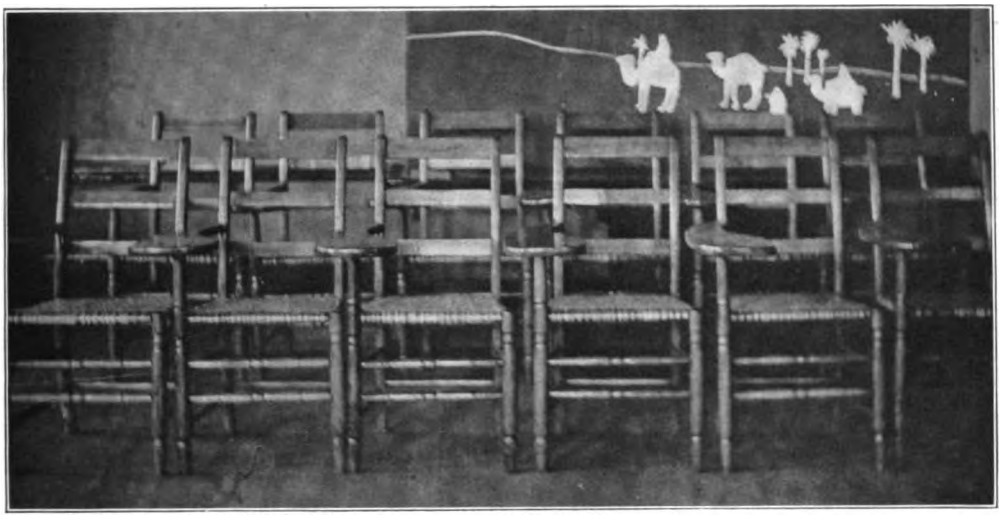

RECITATION CHAIRS RE-CANED BY EIGHTH GRADE BOYS IN THE MANUAL TRAINING CLASS

CHAIRS RE-CANED BY EIGHTH GRADE BOYS IN THE MANUAL TRAINING CLASS

THE HEAD OF A THUMB-TACK

Since most shops use uniform-sized drawing paper, it is easy to do away with the thumb-tack nuisance. A shallow recess may be cut in the board so that the heads of the tacks will allow the tee-square to slide over them. These recesses should be carefully located and cut so that the paper may be fitted into the corners, thus removing the need of squaring up the paper. In case various sizes of paper are used, the recesses may be cut so that the paper can be placed either horizontally or vertically, thus doing away with the two most troublesome tacks on the left hand edge, and leaving the balance of the board free. The only difficulty with the scheme is that the tacks may not hold well

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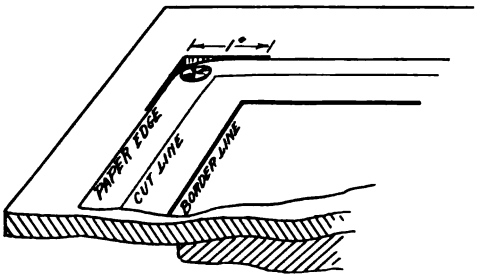
CHAIRS RE-CANED WITH HICKORY SPLINTS BY BOYS FOR RESIDENTS IN THE SCHOOL DISTRICT

after a time because of being placed so near the same spot. This can be remedied by applying a little white lead with a putty knife.

W. W. WHITE,
Director of Manual Arts.
Waterloo, Iowa.



SOME MANUAL TRAINING DON'TS

Don't start a competition between the screwdriver and a chisel as to which will drive home a screw quickest. You might want to use the chisel again.

Don't experiment with a crosscut-saw on a board filled with nails. It takes less time to get hammer to pull out the nails than to file the saw.

Don't keep your eyes open if you decide to blow out shavings from the bottom of a mortise. It costs more now to call on the doctor.

Don't put shellac on cuts or splinter sores. What you have sealed up is more dangerous than what you have sealed out.

Don't have on loose sleeves or flowing neckties when working with machinery unless you want to get rid of the garments and take chances on a long vacation.

Don't leave the ends of glued-up stock exposed to the air of a warm shop unless you just enjoy making the joints over.

Don't pile up lumber so the air gets all around it if you feel happier taking the curve out of barrel staves.

Don't sharpen up any of your tools. It is so much easier to make a big noise and get less done with dull tools.

There are three tests of wise work—that it must be honest, useful, and cheerful.—John Ruskin.

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CURRENT PUBLICATIONS

THE School Art League of New York City has just published in beautifully printed and illustrated form, a *Victory Pageant* written by Dr. James P. Haney, director of art in the high schools. This can be secured at a small cost, which includes the right of presentation, from the secretary of The School Art League, 10 East 47th Street, New York City.

This pageant was prepared by Dr. Haney with the idea that it might prove to be the very thing desired by schools wishing to celebrate at this time, the triumphant closing of the war. It was first performed before The School Art League, of New York City, at its annual meeting in December last, and met with such instant and cordial approval that it was immediately in request by a number of schools that desired to give it in connection with their school commencements in January and February.

After its presentation, Dr. Haney made a gift of the pageant to the League, which has now issued it with full stage directions and illustrations showing the several characters. These drawings were made by students in the Washington Irving High School, of New York City. They are supplemented by descriptions of the costumes, written by Miss Ethel H. Averell, of that school, who designed the gowns and accessories. The pageant itself, is presented in brief and simple form. It can be performed by less than a score of girl students. Its speaking parts being only two, require no talent that a grammar or high school cannot find among its pupils. The costumes are simple and easily made and nothing is needed in the way of scenery. The beauty of the whole is secured by the clever massing of a bank of color in the form of many peasants dressed in national costumes, around the figure of Victory. Victory herself, is seated on a throne and receives, one by one, the several victorious nations, beginning with Belgium and ending with America.

The Gary Schools. A General Account by Abraham Flexner and Frank P. Bachman. Published by the General Education Board, 61 Broadway, New York, 1918. Size 5¼×8 in.; 265 pages, price 25 cents.

This is the long-looked-for report on the Gary system as practiced in Gary. However, the present volume is only one of eight. This first volume gives a summary of the entire survey and ought to be read and re-read, because it touches upon so many problems that are vital to the educational work of the present and immediate future.

The industrial work at Gary has been much criticised by some persons and much praised by others. This report does both and gives reasons. The report calls attention to some striking weaknesses in shop instruction, but unfortunately such weaknesses are not all confined to Gary. For that very reason this frank presentation of facts is of special value. One point in particular is emphasized which is directly contrary to oft-repeated claims for the Gary scheme. The public has been told many times that the Gary system is a scheme of vocational training. The report says, "It remains to be emphasized that the shopwork at Gary is not primarily a preparation for earning a livelihood as a mechanic or artisan. In the long run, the importance of the work depends on its general educational value—on what it does to develop the child's senses, to broaden his vision, and to furnish an outlet for abilities that might otherwise go uncultivated. On the other hand, it is only fair to add that the training received by some pupils in some of the shops proves of direct vocational value when they enter certain of the industries on which the prosperity of the city is based."

If the other reports in the series are up to the standard of this one in discrimination and spirit, the Gary school survey will be more than a weather-vane; it may prove to be a guide post at the fork in the road.

Vocational Printing. By Ralph W. Polk, director of vocational instruction in the public schools of St. Joseph, Mo. Published by Guy M. Jones Company, Indianapolis, 1918. Size 5¼×7½ in.; 243 pages; price, $1.25.

There are several reasons why this book should receive high commendation. (1) It is sufficiently comprehensive—for its purpose—to be a textbook for apprentices and vocational school students. (2) It presents the essential technical facts of printing in compact form. (3) Besides covering the mechanical side of printing, it devotes a large amount of space to the art and design side of the craft, which has been the author's hobby for years; it treats of composition, proportion, shape harmony, the principle of balance, principles of color, etc., in accordance with the best current practice among printers. (4) It was written by a man who has had many years of experience in the printing business, hold-

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ing all sorts of positions from an apprentice to that of the superintendent of a large plant. (5) The book has grown out of an intense desire to be helpful to the boys who want to learn the printer's craft.

Not only in vocational classes will this book find a place, but wherever printing is taught to beginners, it will be found useful either as a textbook or reference book.

Handbook of Furniture Styles, by Walter A. Dyer. Published by The Century Co., New York, 1918. Size, 5½x8¼ in.; 155 pages; 75 illustrations; price, $1.50.

To the person seeking a working knowledge of historic furniture styles, this volume meets every need. By means of selection and elimination a rather complicated subject has been reduced to lowest terms. Beginning with the Italian Renaissance the changing characteristics of the furniture of succeeding periods are traced down to the present styles of our own country.

A bibliography of the best books in this field increases its value to students and collectors.

The Theory and Practice of Color, by Bonnie E. Snow and Hugo B. Froelich. Published by The Prang Company, Chicago, 1918. Size, 8x10½, 53 pages; price, $3.00.

The above book will prove illuminating to anyone who has felt himself on an uncharted sea so far as a scientific knowledge of color is concerned. The science of the subject is so simply presented that the layman as well as the artist can understand and practice the theory. The introduction of a series of hand-colored charts is the striking feature of the book. The need for such a book combined with the reputation of the authors in this chosen field, will soon bring a large audience.

RECEIVED

Vocational Education in the Light of the World War. By John Dewey. Bulletin No. 4. Published by Vocational Education Association of the Middle West. Points out that the only universal training that should come as a by-product of the war is training for universal service. It should apply to young women as well as young men, and should comprise the following four essentials of preparation for a vocation: Physique, economic efficiency, social competency, and a trained capacity for the consumption and for the employment of labor. For accomplishing these ends the cantonments, which were created for war, should be utilized. Presents a high ideal for the basis of our national life.

Buildings and Equipment for Schools and Classes in Trade and Industrial Subjects. Bulletin No. 20. Published by Federal Board for Vocational Education. Part I surveys the whole field of trade and industrial education from the standpoint of buildings and equipment for type schools and classes. Part II covers equipment, courses of study, and methods of instruction in carpentry.

Retail Selling. Bulletin No. 22. *Vocational Education for Foreign Trade and Shipping.* Bulletin No. 24.

The main purpose of the first named is to make available for the entire country information that will enable boards of education and merchants to establish courses of study in high schools and stores for training young people in the retail selling vocation; also to point out need for teacher-training courses for this type of education.

The second bulletin deals with "that portion of the field of education for foreign trade designed to meet the requirements of those who must learn the practical aspect of the fundamentals of overseas commerce and shipping within a comparatively short time."

Agricultural Education. Bulletin No. 26. Published by the Federal Board for Vocational Education. Devoted to the state supervision of vocational agriculture as it pertains to the supervisor, teacher-training work, and professional improvement of teachers in the service.

Guide to United States Government Publications. Bulletin, 1918. No. 2. Published by Bureau of Education, Washington, D. C. Gives organization and work of the ten executive departments of the Government and miscellaneous important independent bureaus and commissions; also the publications issued by these departments. Contains much worth-while information.

Newspaper Writing in High Schools, by L. N. Flint, chairman of department of journalism, University of Kansas. Published by Lloyd Adams Noble, New York City. Contains information on the place and purpose of this work, value as training in composition and other related material. Outlines a course covering thirty-six weeks.

Autogenous Welding. Contains illustrative material describing the uses made of oxy-acetylene welding at the Panama-Pacific Exposition.

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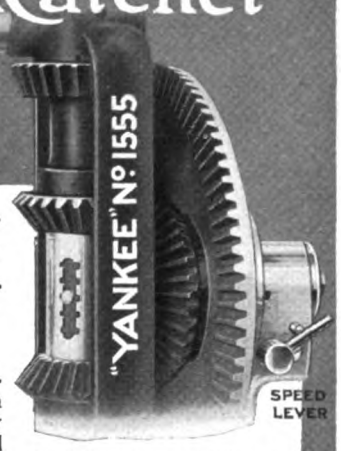

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FIELD NOTES

(*Continued from p. X.*)

instructors listed and there will be one meeting each week for seventeen weeks.

M. R. Bass, Principal of the Evening School, Dunwoody Institute, will handle the subjects of evening schools, records and methods.

J. O. Cederberg, instructor in the College of Engineering, University of Minnesota, will handle architectural drawing and building trades.

R. T. Craigo, Principal of Day School, Dunwoody Institute, will take day and part time schools.

O. C. Edwards, Assistant Professor in the Extension Division University of Minnesota, will handle related subjects.

Elizabeth Fish, Principal of Girls Vocational High, Minneapolis, will consider girls' work.

H. W. Kavel, acting director of Dunwoody Institute, will cover the ground of the changing ideas from manual training to the present trend of vocational and trade instruction.

Frances Morehouse, instructor in College of Education U. of M., will discuss girls' work.

G. A. McGarvey, supervisor of trade and industrial education, State Board for Vocational Education, St. Paul, Minn., will discuss the certification of industrial teachers under the Smith-Hughes law.

Detailed programs of the courses at the various centers may be had from the State Department at St. Paul or from the University of Minnesota.

—J. L. PEMBERTON.

NEWS FROM THE NORTHWEST

EVERETT, Washington, has elaborate plans for vocational training under the Smith-Hughes Act, and it looks as tho this city would set the pace for the Northwest if the influenza epidemic would ever permit the opening of the schools. Everett has not had more than six or eight weeks of school this year.

L. B. Travers, formerly of Marysville, Washington, has been appointed supervisor of vocational education for Everett. He takes the place of A. D. Kestor, who has been seriously ill for more than a year and who has resigned his position with the schools.

Mr. Travers has established four Smith-

(*Continued on p. XV.*)

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FIELD NOTES

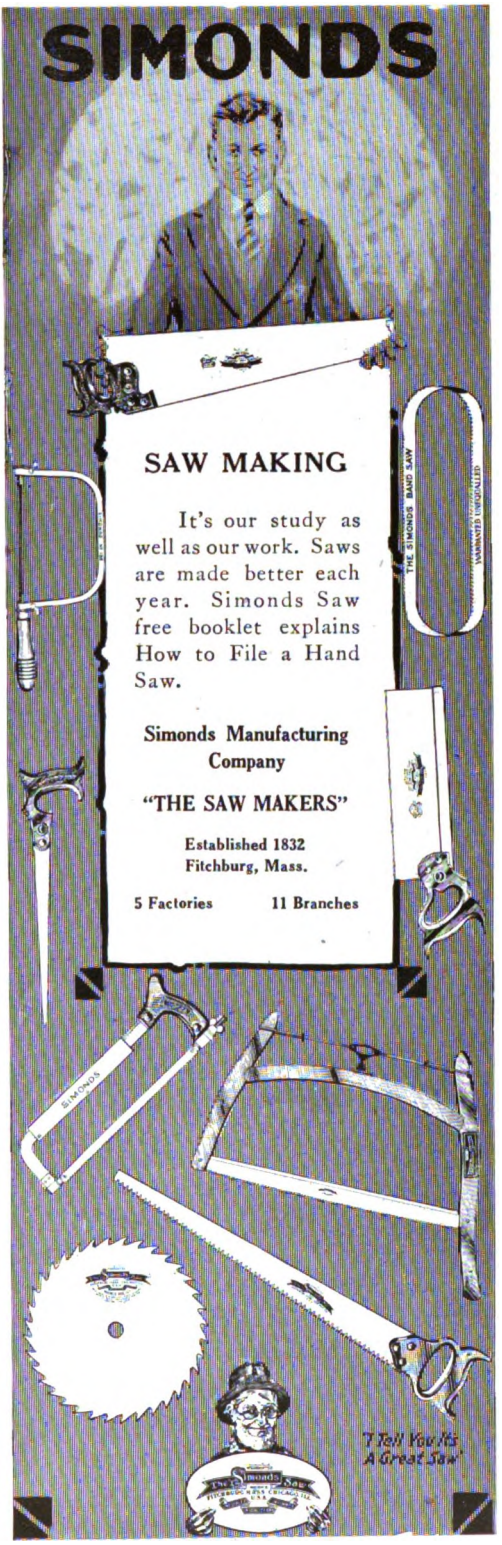
(*Continued from p. XIV.*)

Hughes classes, one each in carpentry, electricity, automobile, and gas engines and machine shop. These classes are taught by experts who devote their entire time to the work, teaching not only the shopwork but also the related subjects. The machine class is taught by Mr. Rose, formerly on the faculty of the University of Washington. Lewis Jacobson, a carpenter of twenty years' experience, has charge of the carpenter work. His class is constructing a five room bungalow complete. A. Bergerson has the automobile work. In order to obtain his services the Everett school board purchased his carburetor service station. The electrical work is under the direction of A. Paterson, who is the owner of an electrical shop in Everett. The classes in these trades average eighteen pupils.

The meeting of the Washington Educational Association, postponed from October until December 26 because of influenza, was again postponed for the same reason. Most of the Washington schools have been closed for the past month, but are to reopen soon. The Seattle committee in charge of entertaining the visiting manual arts teachers had a fine program prepared and the shop teachers of the state missed a real treat when the meeting was postponed. This committee consists of Lee A. Juillerat, Harry L. Deits and A. McConnell, all live wires and all intensely disappointed because their plans came to naught. However, if the W. E. A. meeting carries over until next fall, the manual arts teachers of the state will gather in Seattle early in March and give the Seattle corps a chance to show their hospitality.

Last spring a start was made at organizing a Pacific Vocational Association and Portland invited the association to hold its first meeting there, voting $500 to cover the local expenses of the gathering. High railroad rates due to war conditions made it appear necessary to postpone definite action until it was impossible to obtain rates. In the Pacific district distances are so great that a meeting cannot be a success unless delegates are able to obtain reduced rates. Now that the war is over, organization is under way, and while it may be impossible to hold anything but a preliminary meeting this year in San Francisco, there is no doubt but that in another year a strong organization will

(*Continued on p. XVI.*)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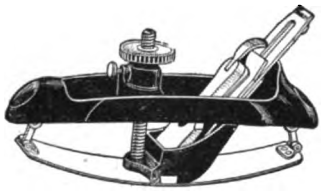

Stanley Circular Plane

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FIELD NOTES

(*Continued from p. XVI.*)

hold a convention in some Pacific Coast city. The original plans for forming the organization have been modified so that now the directors of vocational education in the various states will have charge of organizing in their respective states.

—EDWARD G. ANDERSON.

IMPETUS GIVEN TO TOY MAKING

THE School Art League and the Art Alliance of New York City united this past season in conducting an exhibition of toys which were the results of a competition in the eighteen high schools of New York City. The interest in the exhibition exceeded all expectation, and should serve as a suggestion to other cities. Over 150 toys were shown. The judges who awarded the prizes were selected from the toy trade of the city. They were F. D. Dodge, secretary of the Toy Manufacturers' Association; R. H. McCrady, editor of "Playthings"; E. P. Calderhead, of the toy department of Gimbel's; Adolph Reis, of the toy department of Best's; W. D. Marston, of the toy department of Wanamaker's.

Most of the toys were designed to be cut out in wood, and several showed interesting mechanical devices. Among these were a sailor who wig wags messages, and a German prisoner who frantically raised his hands in surrender. The war, however, was little emphasized in the designs, which, for the most part, were quaint interpretations of the people and animals that children love.

Under the auspices of the Art Alliance an exhibit of tin can toys was held from January 2 to 11. Tin can toys were originated by Edward Thatcher of Teachers College, New York, for use in occupational therapy, and are being made by the wounded soldiers in the American hospitals in France and in the United States. They are also being made by pupils in various public schools. The models shown were constructed by Edward Thatcher and painted by Isabel Thatcher.

The movement has received much attention also in the public schools of Detroit, Michigan, where 40 school workshops with 80 instructors have contributed their full share to the Red

(*Continued on p. XVII.*)

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FIELD NOTES

(*Continued from p. XVI.*)

Cross thru the sale of toys made in the school shops. A friendly rivalry lent added interest.

ANNUAL CONVENTION OF NATIONAL SOCIETY FOR VOCATIONAL EDUCATION

The Twelfth Annual Convention of the National Society for Vocational Education will be held at St. Louis, with headquarters at the Statler Hotel, on February 20-22. The advance program, copies of which may be had from the offices of the Society, 140 West 42nd St., New York City, proposes the following topics for discussion in the general meeting:

Rehabilitation of Wounded Soldiers.

Methods and Results of Industrial Training for War Workers in the War Industries.

Use of Vocational and Technical Schools for Training Army Mechanicians.

The States and the Smith-Hughes Act.

War-time Participation of Women in Industry: Its Permanet Effects.

The Future of the Society.

Two full afternoon sessions will be given over to sectional meetings, constructive programs for which have been prepared by groups of persons representing each of the four respective interests, namely, Agricultural, Commercial, Industrial and Home Economics Education.

It is the purpose of this Convention to evaluate, in so far as possible, the experiences growing out of the war that have a significant bearing upon vocational education and its future development in this country.

RECONSTRUCTION PROGRAM AT BRADLEY

Bradley Institute has acted with promptness in an effort to meet the educational needs immediately following the war. During the holidays a reconstruction program of vocational courses was announced for the winter and spring quarters which included 24 weeks of work for men who had made the grade of 12 in the Training Detachments. These courses lead to the certificate in the automobile course, the electricians course and the machinists course.

(*Continued on p. XVIII.*)

A Pencil for Every Use

For drawing the finest, most delicate lines—for shading where the pencil must be absolutely responsive—for every purpose in between—there is a

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"the master drawing pencil"

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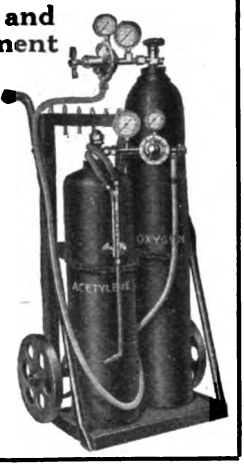
Imperial Welding and Cutting Equipment

Economical, Efficient, Safe, Speedy and Durable. Portable and always ready for use. Welds anything in metal and cuts everything in wrought iron and steel.



Free Copy of the Imperial Hand Book containing complete data as to cost of operation and views of work, will be sent Manual Training Instructors on request.

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FIELD NOTES

(*Continued from p. XVII.*)

Twelve-week courses were announced in farm mechanics, woodworking and architectural drawing and horology. Still shorter courses covering from two to eight weeks were offered in tractor work, vulcanizing, automobile electricity, and storage batteries. By fitting into the regular courses a much larger number of courses are possible. Of these the tractor course is being given special emphasis. One of the large barracks buildings has been utilized for the tractor school work.

In the teacher-training work the Institute announced that subjects ordinarily given during the fall quarter would be available in the winter quarter in addition to the usual program. This, with the new vocational courses, has greatly increased the offering for teachers this year.

The coming annual meeting of the Eastern Arts Association is to be held in New York City on April 17, 18 and 19, the three days preceding Easter. F. E. Mathewson, of Jersey City, has been appointed chairman of the program committee and E. W. Watson, of Pratt Institute, chairman of the local committee. The program will be built up as fully as possible around the idea of the new after-war opportunities before the nation, and what must be done by education in all the arts and industries to measure up to them. The new problems of peace, thrust upon us so suddenly, are in many ways as difficult and as significant as those of the war.

The Kansas State Agricultural College, Manhattan, Kansas, is one of the first to announce a free after-the-war service for men in the army. The mechanical engineering department of the college will be open to army men for entrance into any of the trade schools at any time, regardless of the opening of a term, month or even the school week. Sections of the mechanical trades schools will be conducted regardless of the usual term requirements. The courses available will be motor car repairing, blacksmithing, carpentry, general machine work, electrical work and traction engine work. The work in each department will be entirely practical, the student spending not less than eight hours a day in the actual workshops of the college. The

(*Continued on p. XIX.*)

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FIELD NOTES

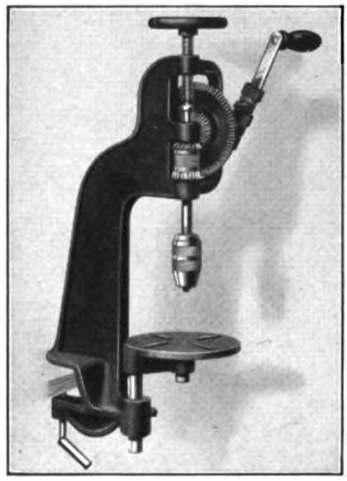
(*Continued from p. XVIII.*)

student may also elect to devote one-half of his time to the mechanical courses of the college and the other half to general farm or live stock work if he desires. The college is not going to collect any tuition or incidental fees except the actual costs of the tools used, and the student may take his own tools home with him.

To those who despair of the future usefulness of our returned wounded soldiers, the report from the vocational office of the Department of Soldier Civil Reestablishment, Ontario, Canada, will prove quite illuminating. On September 30, 1918, there were 713 returned men taking industrial re-training in one of the following subjects: Motor mechanics, shoe repairing, machine shop practice, telegraphy, cabinet making, mechanical drafting, farm tractors, motion picture operating, estimating and surveying, agriculture, gold pen grinding and lens grinding, adding machine repairing, electric wiring, machine designing, market gardening, milling and assaying, mechanical dentistry, architectural drafting, show card and sign writing, oxy-acetylene welding, salesmanship, silversmithing, music, pattern-making, tire repairing, tinsmithing, armature winding, building construction, carpentry and piano tuning. For soldiers suffering from shell shock, gardening has been pronounced one of the best curative mediums.

The enrollment of tradesmen in the teacher-training courses being offered in the various States augers well for meeting the future demand for teachers of trades. It has been found, however, that potential teachers are not willing to leave their work to enter these classes, hence Saturday afternoon or evening classes are being provided. In Delaware College, Newark, Delaware, a class of machinists has recently enrolled in a Saturday afternoon teacher-training class. A number of evening classes have been organized for the winter at the University of Washington, Seattle. The Agricultural and Mechanical College, Houston, Texas, is making partial surveys of the leading industrial cities of Texas, with a view to establishing sub-centers where teacher-training classes may be established.

(*Continued on p. XX.*)



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FIELD NOTES

(*Continued from p. XIX.*)

During the coming year approximately 100,000 soldiers, sailors and munitions workers will be assisted by the Methodist Episcopal church in learning trades and finding employment, according to plans announced in New York City recently by the Methodist Centenary Committee. "Good-will industrial centers," patterned on the lines of the Morgan Memorial church in Boston, are to be established in 20 cities, including New York, Pittsburgh, Philadelphia and Chicago. Among the trades that it is planned to teach are cobbling, upholstering, carpentry, cabinet making and tailoring. The public will be asked to contribute old clothes, second-hand furniture and other materials which can be used as "laboratory material."

Manual training teachers from the Atlantic to the Pacific and from the Gulf to the St. Lawrence feel a distinct personal loss in the death of E. C. Schiele, head of the educational department of Henry Disston & Sons. Mr. Schiele was a victim of the recent epidemic, passing away in Syracuse, New York, on December 22.

Entering the employ of Henry Disston & Sons at the age of twenty years, Mr. Schiele rapidly arose to the position he has held for the past five years. As head of the educational department he came in contact with the manual training teachers of the country in a very helpful way. He was aggressive and progressive, but always with a fine regard for business ethics. He will be long remembered for his enthusiasm in his work and his rare possession of friendships.

The pupils of the junior high school in St. Johnsbury, Vermont, under the direction of L. H. Baxter, have completed for the American Red Cross surgical department, 40 dozen splints, 6 folding bedside tables, 3 costumers, and 6 tabourets. For the Y. M. C. A. Camp they have made 6 camp tables with checker-board tops. The Junior Red Cross manual training activities for the entire State are under the direction of Mr. Baxter.

A vocational night school for shipyard workers is soon to be established in each of the

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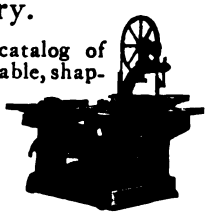

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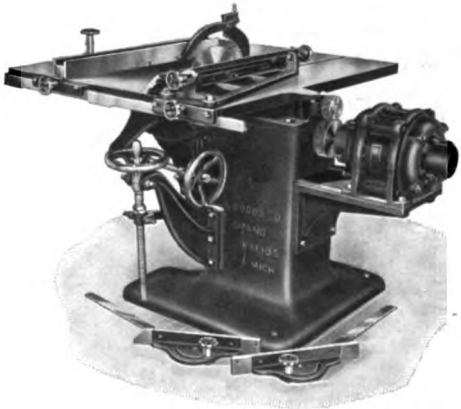

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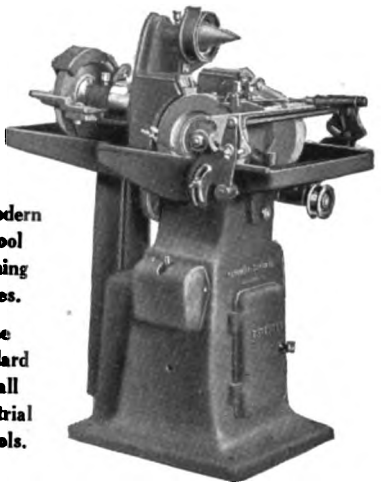

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FIELD NOTES

(*Continued from p. XX.*)

cities of Baltimore and Jersey City. The course will include subjects on ship construction, including blueprint reading and ship designing. The school organized earlier in the season at Newark, New Jersey, has registered 453 men for this work, representing employes from four of the large shipyards.

Charles R. Bostwick, First Lieutenant in the Sanitary Corps, has been transferred from General Hospital No. 16, New Haven, Conn., to Fort Bayard, New Mexico, as curative shop instructor in charge of all shop and technical instruction. There are school shops in auto repair, carpentry and cabinet work, trunk making, electricity, telegraphy, mechanical drawing and printing. All the printing for the Post and much of the auto repair work is done in the school shops. The hospital at Fort Bayard is for tubercular soldiers exclusively.

Edward G. Anderson, the correspondent for this Magazine in the Northwest, has just been appointed principal of the training department at the State Normal School, Ellensburg, Wash. Mr. Anderson went to the Normal only last September as an instructor, which makes this promotion the more gratifying.

Gradually the manual training men are returning from their service in the cause of Freedom and are taking up their work in the schools. Herbert R. Schilling, a Second Lieutenant in the Machine Gun Branch, has just accepted the position of instructor of woodworking and drawing in the grades at Erie, Pa. For three years before we entered the war, Mr. Schilling taught at Portsmouth, Ohio.

Robert C. Craig has recently been made head of the night school department of the Technical High School at Indianapolis. Mr. Craig spent last year at Teachers College, New York City, completing his work for a degree and then returned to his former position.

W. E. Gordon, formerly director of the vocational education in the schools of Fort Wayne, Indiana, has accepted the position of professor of vocational education at the University of Arizona, director of vocational education in the

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FIELD NOTES

(*Continued from p. XXII.*)

university high school and state inspector of vocational schools. He is beginning at once with teacher training under the Smith-Hughes Law.

Russell C. Lowell, an instructor and department head in science and mathematics in the technical and English high schools of Providence, R. I., has been appointed director of vocational education in the public schools of Indianapolis, Indiana.

Central High School, Minneapolis, has made 600 folding bedside tables for the Red Cross. About 320 students were engaged in the work at one time, many of them working over time in order to complete the total number by January 1.

The War Trade Board announces the removal of restrictions formerly placed upon the importation of mahogany logs and mahogany lumber, shellac and varnish gums. This is an item of interest to the furniture industry.

In a lecture on "Mobilizing Youth," Charles Zeublin, noted publicist, recently said: "We ought to draft our population for education the same as we did for the Army. Every boy and girl ought to be kept in school until eighteen years of age."

Mississippi will spend every dollar of her federal appropriation for vocational education this year, totaling $42,971.02. In fact, more schools have met the required conditions than they have funds for.

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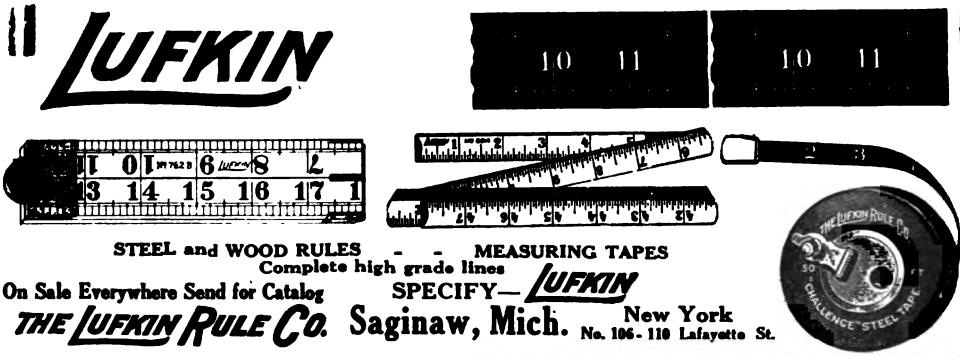

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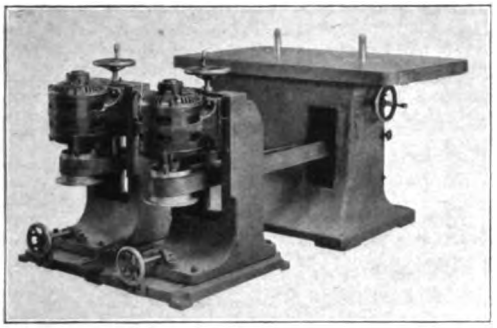
TRADE NOTES

"Machine Shop Equipment for Vocational and Industrial Schools" has just been published by the South Bend Lathe Works, South Bend, Indiana. It lists five standard machine shop equipments, based on a varying number of pupils to be provided for and the courses to be given. The book also contains illustrations of machine shops located in different parts of the country. Copies of this booklet and also of "How to Run a Lathe" will be forwarded upon request. This firm has lathes in over 200 schools in the United States.



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This new motor drive arrangement takes up less room on the shop floor, because a distance of only 5 ft. between centers is required, making the actual floor space about 7 ft. long by 5 ft. wide, only the amount that is taken up by the machine. This arrangement uses standard vertical motors of any kind called for by the electric current in the shop, doing away with the need of highly specialized built-in motors. This motor drive arrangement can be furnished not only with new shapers but for shapers now in use. Any kind of starting units for the motors can be furnished.

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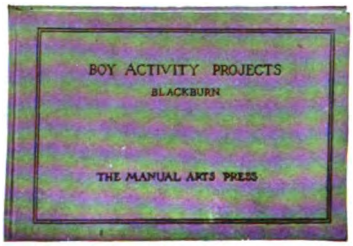

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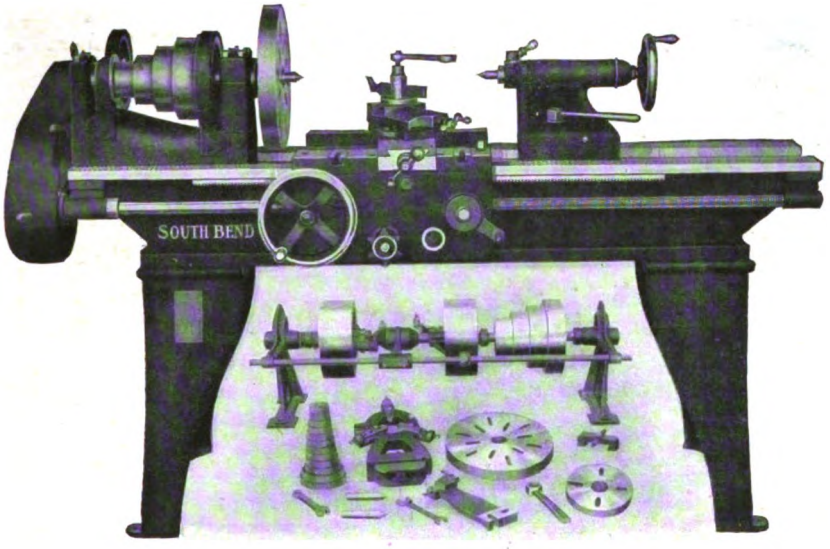

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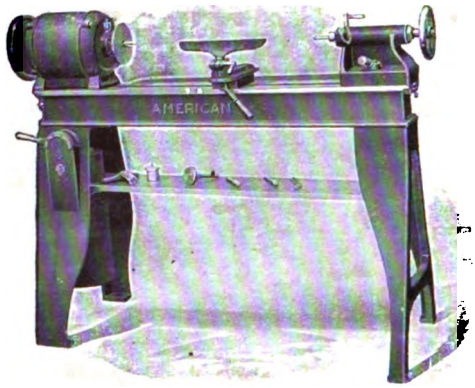

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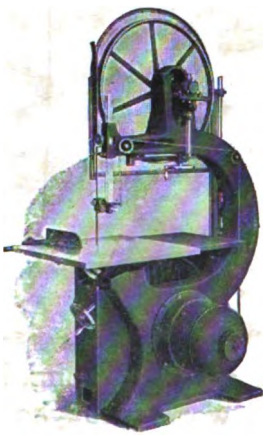

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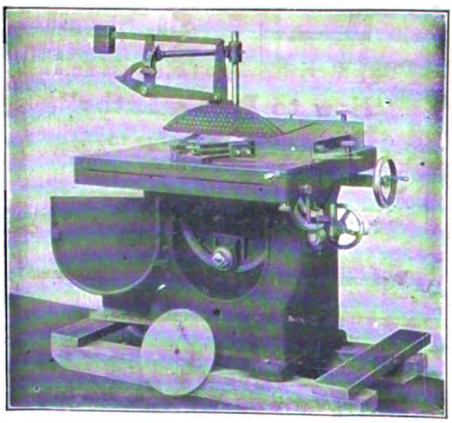

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Vol. XX MARCH, 1919 No. 7

MANUAL TRAINING MAGAZINE

DEVOTED TO THE MANUAL ARTS IN VOCATIONAL AND GENERAL EDUCATION

YOUTH should be a season of instruction in industry and the useful arts, as well as in letters and the sciences mastered by their aid. Each child should be trained to skill and efficiency and productive labor. —*Horace Greeley.*

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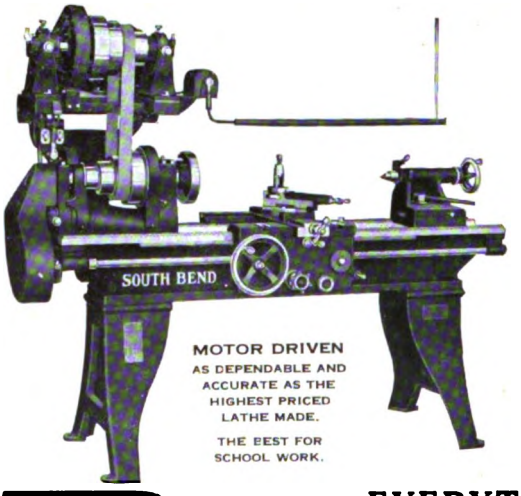

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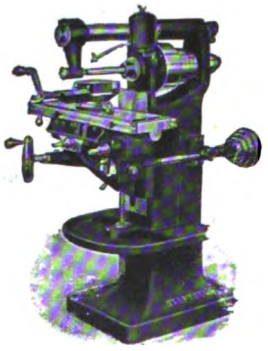

Time and Money is Wasted

very often by the purchase of tools not adapted to the work. You would not think of putting a 32 in. lathe in your school room on account of the high first cost, and it is not adapted to your work. You can put two 16 in. lathes or more in the same space and you can buy two or three machines for the cost of the larger one. Apply that same principle to your milling machines and buy **STEPTOE** small power feed or hand millers, a machine especially adapted to school room work.

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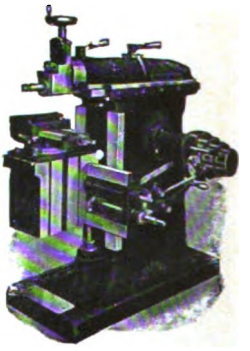

should be your first consideration in equipping your machine shop. Large pieces can be planed on a planer, but small parts should be put on a shaper. The simplicity of design of **STEPTOE SHAPERS** means ease of operation and a consequent saving in repair bills.

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FIELD NOTES

UNDER the operation of the Smith-Hughes law schools never even proposed before are being opened. One of these is a vocational school for miners. Francis A. Thomson, dean of mining, University of Idaho, has arranged for the school as a part of the work of the University. Lieutenant Frank H. Skeels, mining engineer and practical miner and mine manager, who has had extensive experience in both the Couer d'Alenes and British Columbia, has been placed in charge of the school.

A term will cover eight weeks, most of the time being spent in one of the big mines. The school will be open to young men or to older men who desire the benefit of the practical instruction it will afford. Such a term will give a man a good idea of how to break rock, handle power, timber a mine, drive a tunnel or upraise, handle pumps and do many other kinds of mine work.

Mine owners and managers in that part of the country look with much favor on the plan.

AROUND NEW YORK

THE regular monthly meeting of the School Crafts Club was held January 18, at eight o'clock in the Ethical Culture School, New York City. The program consisted of a short business meeting followed by an address "Along New Trails—Some Observations and Some Results," by Frank E. Mathewson, director of technical and industrial department, William L. Dickinson High School, Jersey City. Mr. Mathewson is well known throughout the educational field, particularly in manual training and vocational work, for the high standards that he has maintained along vocational lines. During the last year the government has employed his ability in establishing centers for intensive vocational training of thousands of enlisted men. Mr. Mathewson spoke about the work done throughout New York and New Jersey and illustrated his lecture with slides. The value of short unit courses was brought out by the speaker. Club members asked questions and discussed the subject of short unit courses after the speaker had finished. The following were proposed for membership: Allen D. Backus, supervisor of manual training, Newark, N. J., A. Alfred Cain, teacher of manual training, Ethical Culture School, Otto B. Durholz, teacher of related subjects, vocational schools, Paterson, N. J., Judson G. Spofford, assistant in trade and industries, New Jersey State Department of Education, Trenton, and Andrew D. Venters, instructor in machine shop practice, Public School No. 12, Passaic, N. J. The officers for the year 1919 are Hugo B. Froehlich, Newark, N. J., president; Edward D. Griswold, Hastings-on-Hudson, N. Y., vice-president; John J. Hatch, Newark, N. J., secretary; and Martin J. Corcoran, Elizabeth, N. J., treasurer. The program committee consists of the president, vice-president, Laurence J. Young, Brooklyn, N. Y., H. A. Albright, Easton, Pa., and Russell E. Hemion, Paterson, N. J. The membership committee consists of E. A. Reuther, Westfield, N. J., Ralph Loomis and Jos. A. Donnelly. The publicity committee consists of Richard Beyer, Hoboken, N. J., Edwin M. Roberts and Philip M. Wagner.

The New York Evening School of Industrial Arts is conducted by the board of education and offers instruction and materials free to citizens, men and women, who can qualify for admission. The purpose of the school is to provide instruction in branches of drawing and design as applied to art industries. Art students who intend to devote their talents to decorative art, or workers actually engaged in the industries in which drawing, color and design play important parts, are eligible for admission. The instruction is given by teachers who are actually at work in their special fields. Advisory boards in the various departments are in constant touch with the work done at the school. Practical work, loan exhibitions, lectures by men and women prominent in the fields represented, and visits to museums, form part of the course in each subject. The school is essentially a training place for artisans. Its constant aim is to stimulate artists to become better craftsmen and craftsmen to become better artists, to encourage craftsmen and to raise the standards of art in our industries.

Instruction is offered in the following subjects:

Book Illustration: Drawing from draped model, composition, study, and execution of compositions for book decorations, lettering, initials, title pages, the application of general decorative illustration, etching and art lithography. Instructor, Arthur S. Covey.

(*Continued on p. VI.*)

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Costume Design: Figure drawing, sketching from models.

Elementary and Advanced Drawing: From the cast and live model.

Interior Decoration: Including woodwork and furniture, draperies and rugs, walls, and ceiling decoration.

Jewelry Design: Including the theory and melting of metals, repoussé, chasing, etching.

Modelling and Sculpture: Forms in relief.

Mural Decoration: Figure painting and composition suitable for achitectural decoration.

Poster and Advertising Design: Study of the poster, lettering, lithography.

Principles of Design and Craft and Novelty Work: Decorative treatment of natural forms in their application to industrial art, color, harmony.

Textile Design: The application of design to the manufacture of textiles, woven fabrics and wall papers.

The board of education of New York City has authorized the formation of three additional classes at the Navy Yard Continuation School, making in all 21 classes with over 450 students attending.

The board recently approved the proposition of the board of superintendents for reorganization of the course of study in the Manual Training High School of Brooklyn. The idea of the proposed change originated with the principal, Dr. Horace Mann Snyder, who has been working on the course of study for a year. The proposed course is uniform for the first two years, the work of which forms a basis in actual experience for choices available at the beginning of the third year. For example, the shop course in the first two years provides training in all shops in both wood and metal. Courses in industrial geography and industrial chemistry provide a comprehensive survey of the industrial field. Instruction in English, mathematics, and drawing are directly related to the underlying technical aim of the course. At the end of the second year the student may elect the technical college preparatory course or groups of technical electives arranged to emphasize the architectural, chemical, electrical and structural lines of work.

The group in architecture and building aims to meet the needs of two types of students—those who have talent as designers and will start as assistants to architects after graduation, and those who will prefer to follow the more active life of the building and contracting business. After graduation these latter students will start in some minor position in the building trades, eventually becoming superintendents or contractors.

The chemical course is intended to give such practical and theoretical training as will enable young men to find chemical employment with manufacturers, in either the laboratory or the works.

In speaking about this work Dr. Ettinger stated that he is convinced that the proposed course will give those boys who plan to enter higher technical schools a much better preparation for such institutions than does the present course. More important than that, however, it will give a great number of boys who choose that school because of their interest in technical and mechanical work, the subjects which will be of most value to them in earning a livelihood.

The subjects are so arranged that whether a boy remains one year, two years or more, he will have had, during the period he has been a pupil in the school, courses which are of value to him in themselves and which will immediately function when he leaves school.

So many pupils have applied for admission to the Brooklyn Vocational School, located on the seventh floor of the Cary Building, Brooklyn, that the board of education has decided to lease two additional floors in the same building. The school opened in June, 1915, with about 150 pupils. It has since grown until now there are 465 pupils. Owing to this increased attendance space formerly used for classes in English, history, civics, and sciences, has had to be turned over for mechanical instruction, leaving no space for gymnasium, lunch room, assembly hall, or for storage of wood used by the classes.

Twenty pupils is the maximum number allowed to a class by the department of education, but owing to the congested condition from thirty to thirty-five students are at present in each class room.

—W. H. Dooley.

(*Continued on p. VIII.*)

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The Finish Is Important!

SURELY this is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

JOHNSON'S WOOD DYE

Is just the preparation for staining models. It is very easy to use—goes on like oil without a lap or a streak. It is made in 14 attractive shades—which may be easily lightened and darkened. Over the dye apply a coat of

JOHNSON'S PREPARED WAX

This gives a soft, artistic finish of great beauty and durability. It is clean and easy to use and economical—no tools or brushes required—all you need is a cheesecloth rag.

Johnson's Prepared Wax is now made in Liquid form as well as Paste. The Liquid Wax polishes instantly with but very little rubbing.

Write for our booklet on wood finishing. We are glad to furnish it free to Manual Training teachers and pupils.

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"The Wood Finishing Authorities"
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IN AND ABOUT BOSTON.

THE February meeting of the Boston Manual Training Club was one of special significance to all the forty odd members present. Clarence B. Kingsley, agent for high schools, Massachusetts Board of Education, spoke on "The Place of Manual Training in Education." Mr. Kingsley was at one time a teacher in the Brooklyn Manual Training High School and there became interested in the problems of manual training. The difficulties which manual training advocates found then were such as are in evidence in high schools today. First, the requirements of college preparatory courses were such as to allow little time for shop activities, and second, the general high school courses of study lacked the flexibility necessary to give more intensive shop courses to those who could profit most by such shopwork. In treating the subject as a whole, Mr. Kingsley confined his talk to those values of manual training other than strictly vocational. As a basis upon which to treat these values he gave the following educational objectives: (1) Health; (2) Command of the fundamental processes, such as oral and written expression, mathematics, science, etc.; (3) Worthy home membership; (4) Citizenship; (5) Vocation; (6) The worthy use of leisure; (7) Ethical character. These objectives require "self development through service," upon which Democracy depends. After defining the objectives Mr. Kingsley showed how manual training contributed toward their accomplishment. As an aid to "health" the operations involving the use of the larger muscles play an important part, while those which develop the smaller muscles are not without merit. The ability to think in three dimensions, which manual training gives, aids in gaining a "command of the fundamental processes." "Worthy home membership" is something which should not be considered lightly. Any service which makes of the home a more convenient or more attractive place is a worthy one, and manual training surely aids toward this end. In training for "citizenship" manual training helps by developing an appreciation of the work of others and making for a better and more sympathetic relationship between individuals in a community. As far as "vocation" is concerned Mr. Kingsley feels that any vocational education should not be confined alone to trade processes, but should, as far as possible, include much training which is likely to be of value. For example, one is likely to have occasion to read a blue-print even though he is not engaged in an industrial pursuit. "A vocational training," or that which makes possible this "worthy use of leisure" is probably of greater value today than ever before. As the working day is reduced the question as to how the increased time for leisure can best be used is becoming more and more vital. That manual training greatly helps toward meeting this important objective of education cannot be questioned.

It will be seen from the above that manual training, when viewed in the light of a broad educational aim, has a significant place in education and is worthy of strong support. It therefore behooves all manual training instructors to take their work seriously and so organize their courses of instruction as to make a contribution, as great as possible, toward the accomplishment of the objectives here stated. Much manual training of the past has lacked a freedom necessary to the highest development of the individual. The elementary school shop activities can profitably include work in a variety of materials other than wood. Greater freedom could be accomplished with smaller classes and more time.

In considering the prevocational work for boys who are likely to enter the industries, Mr. Kingsley spoke of the work in Rochester, N. Y., as an example of one way to meet the situation. While all the various trades cannot be represented in the school shops, those which are considered typical can be treated not only by giving boys experiences in the shop processes, but by a study of the trade conditions such as the opportunities for steady employment, the sanitary conditions, etc. This is a big undertaking, but prevocational work should, as far as possible, serve to aid the boy in making such a selection as will offer to him the happiest life and the one in which he can render the greatest social service of which he is capable.

The manual training high school aims at present to enable the boy to intelligently plan engineering work which follows. Here the trade is not taught but the technical principles related to industry are dealt with. Mr. Kingsley feels

(*Continued on p. X.*)

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PRINTING EDUCATOR

Being a facsimile of the front page of a school paper such as could be printed in your school—if printing outfit were installed.

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School Paper an Aid in Education

ASIDE from its educational and vocational values, one of the advantages of a printing outfit in an educational institution is that it provides facilities for the printing of a school paper. Truly the school paper that is actually printed in the school printing department is a perfect coordination of the educational faculties, "Brains, Heart, and Hands."

The school paper, when it is properly planned, edited and printed, will create school patriotism and an increased interest in all activities of the school, educational, athletic and social. It can be made the bulletin of all news regarding the school and can be used as a means of interesting parents by acquainting them with the aims and purposes of furnishing instruction that will appeal both to the motor and sensory faculties. The school paper will acquaint parents with the progress being made by the pupils, and it will afford the principal of a school the opportunity to talk logically and convincingly to the parents of the pupils under his charge. The school paper should be to the school what the newspaper is to the community—a purveyor of news, a public forum for the discussion of relevant matters, and a molder of public opinion.

Art, English, composition, punctuation, spelling, mathematics and mechanical skill form the necessary combination for producing a school paper of value. Such a paper, by creating the demand, will have a tendency to promote logical thought and careful assertion on the part of the pupils, will stimulate originality in ideas, execution and art, and unite into a compact, progressive force all the individual departments of the modern school.

A Service Bureau for Superintendents

DURING the last few years there has been an increased demand for information from superintendents of schools, supervisors, principals, and teachers regarding the educational value, economic advantages, and cost and maintenance of school printing equipments. The information furnished by the Education Department of American Type Founders Company in compliance with this demand has been prepared and offered by men of wide experience in industrial education, and in the printing industries, and in designing the wonderful labor-saving inventions that have marked the progress of printing.

Education Department

American Type Founders Company

300 Communipaw Avenue, Jersey City, N. J

This article is set in Century Schoolbook, a new eyesight-saving type designed for educational printing and advertisements. Note its extreme legibility.

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that the usual order in which the four predominating kinds of shop work are given (bench woodwork, pattern making, forging and machine shop practice) might reasonably be changed to meet the individual needs of the boys. For example, machine shop practice might be given during the first year to boys who wish to specialize early.

In the discussion which followed Mr. Kingsley's address many interesting points were brought out: one was that the large general high school, housing many shop activities, was now being considered very effective. The association of boys in the various courses, commercial, academic and industrial, has a decided social value and a broadening influence which is lost in the highly specialized school. Indianapolis was cited as a city where this plan had gained favor. Mr. Sandberg of the Sloyd Training School, Boston, spoke of the unfair comparisons frequently made between manual training results and those of the vocational school. For manual training two hours a week, or less, is allowed. So-called vocational schools give five or six times this allotment of time to shopwork. Under these different conditions it is hardly just to make comparisons. Mr. Sandberg also suggested the advantages in having school shops open Saturday mornings for volunteer workers, who would thus have an opportunity for projects of special interest. The question of having such shopwork in the high schools as would be accepted by engineering schools of college grade, and thereby relieving the student of shop courses now given in the higher school, was discussed. Mr. Kingsley felt this should be done more generally than at present. So far as is known by the writer the Massachusetts Institute of Technology has not given credit for any high school shopwork, but has insisted upon all students taking the prescribed courses in the technology shops. In woodwork the course, consisting of joints, has not been materially changed in years.

The significant part of the lengthy discussion of the subject, which seems at this time such an old one, was that each man present was made to feel the value of his work. A recognition of their educational service by a state authority gave the men a new confidence which cannot fail to stimulate them to better efforts. Any manual training teacher who may question the value of his work should analyze his instruction to see in what way he contributes to the above "objectives." To the extent that his work helps to accomplish these seven objectives, he is rendering a service to education for Democracy.

—GEORGE M. MORRIS.

MINNESOTA NEWS

A BILL is being presented to the State Legislature providing for a fund of $300,000 to be used in paying the tuition and fees of all returned soldiers who wish to continue their college education, whether at the State University or at one of the denominational schools. It will probably pass without opposition.

The most progressive development so far as Minnesota is concerned is the establishment by the University of Extension of courses in Teacher training for technical and grade teachers under the Smith-Hughes Act. The course consists of seventeen lectures given by instructors from the University, Dunwoody Institute, Girls' Vocational High, Minneapolis, and members of the State Department of Education. The course carries two credits at the University and those completing it successfully will be certified under the Smith-Hughes Act for the ensuing year. About thirty manual training teachers and tradesmen of Minneapolis are enrolled in the class which meets at Dunwoody. We are not informed as to the number in St. Paul, Duluth and Virginia. Reports will be made later.

A start in part-time instruction has been made in South St. Paul. Mr. McGarvey, state supervisor of trade and industrial courses, reports that an agreement has been made with Swift & Company whereby eight boys work part time and attend part-time classes at the high school. More detailed information will be available later in the year.

W. I. Quickstad, who for the past sixteen or eighteen months has been acting principal at Dunwoody Institute, has returned to Virginia, Minn., as principal of the new vocational high school. They expect to occupy their new million dollar plant during the year. Mr. Quickstad has promised to furnish us with details in the near future.

(*Continued on p. XIV.*)

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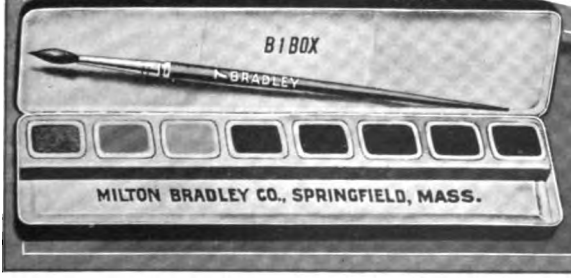
From Pinafore to Cap and Gown



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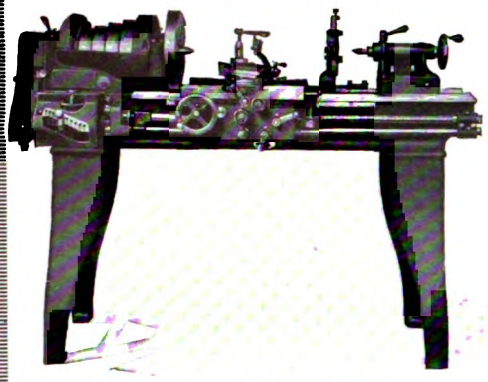

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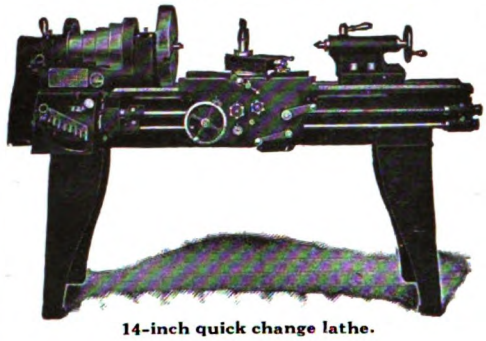
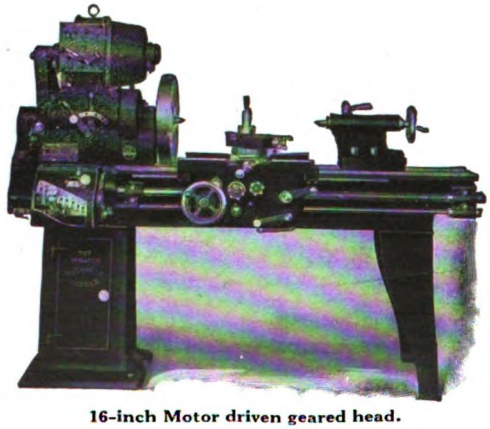


14-inch quick change lathe.



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VOLUME XX No. 7

MANUAL TRAINING MAGAZINE

MARCH, 1919

THE TRUE RELATION OF VOCATIONAL AND GENERAL EDUCATION[1]

ANDREW F. WEST
Dean of Graduate School, Princeton University

I

AS WAR is an abnormal and peace the normal condition of civilized man, the end of the world-war brings us face to face with the problem of resuming our education on normal lines with as much added wisdom as the recent experience of war has given us. Whatever was really true in education before the the war, whether perceived fully or not, is true now, with the difference that the war, notwithstanding all its confusion, has given us a chance to perceive truth in the light of new experience. We should therefore pay little heed to the voices of confusion telling us that everything has changed and that nothing in education will hereafter be the same as before; nor should we listen to the voices of stolid indifference telling us that everything in education will be the same as before.

Neither of these statements can be trusted, and it is our task to find out clearly and promptly what it is that is changing and what is not changing. Like a wise pilot in an aeroplane, we shall therefore need to know that our machine will fly and that it is safely stabilized for flight, so that we may know how to move to our objective without disaster to our machine or ourselves. It may be easier to fly than to steer, but just now steady steering is more needed in our education than is enthusiastic flying. It is a time for cool heads and trained common sense. Otherwise the confusion around us will bewilder men and make them lose confidence in education. Spinoza said that in studying any problem in order to get at the truth it was man's duty "not to deplore, not to denounce, but to understand,"—not to be carried away by emotional prejudices, not to shed heat but light on any problem. If we add to this the unshaken purpose of viewing education as a whole and also in the relation of its parts to the whole and to each other, it then becomes possible to see clearly how our entire education in all its parts may be planned on the best basis for the future.

[1]An address delivered January 16, 1919, at Chicago before the Annual Convention of the Vocational Education Association of the Middle West.

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There is no time here to argue in detail as to what things are changing or into what they are changing, or as to what things are not changing. We may, however, assert with some confidence that the laws of nature and of human nature remain as they were before the war. The war has not repealed the law of gravitation, the procession of the seasons or the continual sequence of day and night. It has not changed the nature of the plants or animals. It has not changed the law of the mind. Yet though it has not changed our nature, it is changing our attitude from one of acquiescence in the easy-going view of life to something more noble. The new force evoked by the war is the newly quickened sense of discipline and duty. If it pervades our land, it will save and strengthen our education for centuries. But many men have short memories and easily forget what we supposed they had learned. The war once over, it is to many something to be forgotten as soon as possible. Therefore the new impulse must be used while it is still vivid, if it is to be used successfully as the regenerating force for all our education from bottom to top. It should be recognized and embodied in every course of study and in every act of teaching and learning. This is the way to save its full power for the future. To do so will add untold gain in moral and material wealth to our nation. Not to do so will be to miss the greatest chance we may ever hope to have. Never before has so heavy a burden of responsibility been laid on those in charge of our education.

II

Our education follows two leading aims and therefore has two main divisions, education for knowledge and education for action. The first aims primarily to train the individual to the highest intelligence. The second aims primarily to train the individual to the best practice of his occupation. The aim of the first is universal, and its range is limited only by the capacity of the individual. The aim of the second is particular, and its range is limited both by the capacity of the individual and the character of his intended occupation. The first is called general or, in its higher levels, liberal education. The second is called vocational or, in its higher levels, technical or professional education. Though each in some degree shares in the aim of the other, the dominant aim of the first is to know and of the second is to do. Each is necessary to the welfare of the other, and both are therefore necessary in our system of education.

The general education has its three successive levels,—primary, secondary and higher, and the vocational education is also gradually differentiating, with some overlappings, into three successive levels of vocational, technical and professional, which as yet only partly correspond to the three levels of general education. It is not to be expected that they will ever closely correspond with and emerge evenly from the three levels of general education, but it is likely that they will do so to a greater extent than heretofore. All these, when placed in rational relation to each other, form a complete, harmonious, mutually supporting system of education to which all other extraneous forms are related as derivatives or combinations. It is only when their true relation is disregarded that friction and consequent antagonism arise. To organize and administer both the general and vocational divisions and main subdivisions in their true relation is now the largest and most pressing task we have to perform. Nothing should be allowed to stand in the way of doing it promptly and thoroughly. The interests at stake are priceless. Delay adds to our dangers. Error here is fundamental and multiplies itself a thousand fold, with consequent waste

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of money, friction in operation, failure in teaching and discouragement in learning.

III

Nine-tenths of our boys and girls must start early to earn their living. They should therefore have vocational training to prepare them for their purpose. This, it seems to me, is the solid truth on which vocational training rests. It would be foolish to deny it. But, like some other truths, it is not all the truth. Nine-tenths of our boys and girls, yes, ten-tenths, are human beings with minds and hearts as well as hands. Whenever any of them must begin to prepare directly to earn a living, they should have good vocational training, of course. Is this all they are to have? Will their vocational training be injured if they also have as much good general education as they have the chance to take? Will it not rather help their vocational studies? Just as surely as general knowledge is the best preparation for acquiring particular knowledge or skill, so surely their general education, even though scanty, will be a help in vocational education. Owing to our present imperfect coordination of the two, much friction arises. But this should and can be largely remedied. Meanwhile we may rest assured that good general schooling is a great help in all practical studies.

There is a more serious aspect of the question. If nine-tenths of our youth are to get nothing or little more than vocational studies, they are cut off from their just chance for as much general education as they can take, and are thereby largely cut off from their just chance to rise by means of the help this broader education would give them. They are condemned in advance to industrial serfdom and are on the way to form a huge proletariat of discontent, the gravest menace our democracy can encounter. They have the same right to a square deal as any other Americans, even if they do not happen to have the same abilities or home advantages. Equal educational opportunity for all who can take it is their right. To do anything to reduce that opportunity is to deprive them of part of their right. I am not a Socialist and yet I think the Socialists are right in their demand that equality of provision for the best general education should be available for every boy and girl in the land who can take it, and that nothing in our education should look toward economic slavery. Do we want a race of serfs and peasants in our land? If we do, a sure means to this end is to reduce the chances for general education.

The greatest peril to which our education is now exposed is the progressive reduction and deterioration of general education, the birthright of every American youth, through the intolerant encroachment of so-called "practical" studies. The demand that everyone should have a good chance to be trained to make a living is just. But so long as the "life is more than the meat," so long will making a good life be greater than making a good living. Man cannot live without bread, but "man shall not live by bread alone." Owing to our strong practical instincts and the material needs of our life, there is no danger that vocational studies of all grades, from elementary to highest, will lack support. They deserve it and will get it. But we are now facing the disintegration of our general education. It simply cannot live if it is to be put in hostile rivalry instead of in friendly cooperation with "practical" studies. Some may ask whether it is worth saving. The answer is easy. It is supremely worth saving because it is essential to developing general intelligence, because it is the one sure guarantee that all applied or practical studies will be steadied by true standards of knowledge, because it is the one sure means of opening the way of highest opportunity to all our youth who can

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make the journey and because it is a necessary safeguard of our democratic freedom. It is always harder to save the invisible than the visible things; but the invisible things, like truth and freedom, are what make human life worth living. What greater duty, then, rests upon all who care for education than to end the antagonism between vocational and general education by placing them in their true and beneficial relation of mutual cooperation.

These remarks indicate some of the perils of severing vocational from general education. If, then, they should not be severed, except when it is necessary to begin vocational studies in order to make a living, how ought they to be related? The question is not easy to answer off-hand nor in brief fashion. Before a definitely practical answer can be given, there must be a closer agreement as to what we mean by vocational and general education and a better application of the agreement in practice. There is not yet a sufficient working agreement, so far as I am aware, on these highly important points. Nevertheless some points are clear; enough to make plain what these two types of education ought to be and may become.

First of all, the general education, because of its universality of aim and spirit must be the one general foundation for all our education. Take, for example, our primary schools. Here all the youth of our nation receive or should receive their first elements of general knowledge,—our national language, our national history and other studies. The secondary and higher general education should rise on this base and be developed definitely and to their fullest extent. Second, the vocational education should presuppose as much general education as will not curtail the time necessary for proper vocational training. In the same way the technical and professional education should rest on a still more extensive basis of general education. Thus, in brief, the vocational and general education at every stage are most harmoniously related to each other when the vocational training, intended for a definite particular end in each case, emerges from and rests upon as considerable an amount of general education as is practicable to obtain. In this way the general precedes and prepares for the special education and the special education emerges from, rests on and benefits by the general ability developed thru the general education. Each thus helps the other. If these considerations are sound, it is clear that we have a great deal to do before the happy result can be accomplished. Our general education must be rigorously simplified and centered on the few studies which experience shows are of most fundamental value for the development of all-round intelligence. The students in school and college will need to learn that there is no education for them without their own active and regular exertion in study. The newly wakened sense of discipline and duty must be their powerful helper here, as it must be for all of us who teach. Given a simpler course of general education, a few fundamental studies well and amply taught as well as diligently studied, the problem of our general education is solved. It will also be put in a position to furnish something more definite and dependable at each stage as a preparation for vocational, technical and professional courses. The vocational experts must settle what actually constitutes good vocational training of each kind. So far as I know, a common agreement has not yet been reached. It is imperative that such an agreement should be reached. Experiment will doubtless help to evolve the coming type. Of one thing we may be sure, namely, that unless these studies are planned so as to allow as much general education as is practicable and to arrange vo-

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cational studies so that they emerge from general education, instead of supplanting it, the present danger both to general and vocational education will increase.

I do not here enter into such important questions as the relation of the workshop to the school or the modes of vocational teaching, whether from example to rule or from rule to example, or on anything else of vocational technic. But I do urge on all friends of education the vital importance of using the new-born sense of discipline and duty as the impulse which must save all our schools of every sort. Why listen to the nonsense that mental discipline is absurd and injurious? I know some psychologists—not all psychologists—hold that we know nothing of the mind or even know that we have a mind, and that all we know is "animal behavior." Even if this were so, would it not be well that we animals should be trained to behave as well as possible? And why listen to the nonsense that no student should have to study any subject he finds "uninteresting"? Here the truth that every study should be taught so that the student shall see its value is perverted into the untruth that no study should be taught before the student sees its value. The answer to such theories is written in the world's history. The undisciplined mind has generally been beaten. The master-key to success in studies, general or vocational, as to success in life, is hard work, steady work, honest work, intelligent work.

I have said our two-fold division of education rests on training for knowledge and training for action. There is a third term of human life behind knowledge and action, —the primal impulse of both. Some call it Feeling. Some call it Heart. If we once get hold of this motive in students and teachers, we shall find the force which, acting with friendliness, consideration and sympathy, will show us the way to teach any study and to also unite in one system our vocational and general education.

MANUAL TRAINING IN THE JUNIOR-SENIOR HIGH SCHOOL

R. D. West
Supervisor of Manual Training, Menominee, Michigan

"Just children on their way to school again?
Nay, it is ours to watch a greater thing—
These are the world's rebuilders, these must bring
Order to chaos, comforting to pain,
And light in blasted fields new fires of spring."

IN these days of important problems and great accomplishments, we are in danger of overlooking the foundation upon which was builded an industrial educational structure which made these achievements possible. Yet the necessity of a well established foundation for the wave of industrial training which will follow the close of the war is obvious. The manual training received by our junior high school students will determine in no small part the future of the young men who are to be leaders in our reconstruction period.

Most schools of the country still devote too little time to this subject. It is most essential to make this work required, and to put it on the same time basis as other required subjects. Unless a boy experience industrial training, how is he to determine that he is or is not adapted to an industrial vocation? Granting that he will never need to work with his hands (and that is always

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uncertain) he should experience manual training as an education in the appreciation of the fruits of hand labor. It makes for democracy as William McKeever undoubtedly had in mind when he said, "Industrial training must be thought of first as cultural —a form of discipline necessary for every boy or girl we may expect to live wisely and magnanimously. It is a vicious theory that only those who are compelled to work with their hands should be educated industrially." Ruskin, forty or fifty years ago said, "It would be part of my scheme of physical education, that every youth in the state from the king's son downward, should learn to do something finely and thoroly with his hands, so as to let him know what touch meant, and what stout craftsmanship meant; and to inform him of many things besides, which no man can learn but by some severely accurate discipline in doing."

The progress in vocational education has forced upon manual training the making of its results function industrially. As this purpose is realized, the advocates of vocational education find manual training the best preparation for trade training. Manual training has proven itself an educator of the educators in that it has taught them that it provides cultural and disciplinary training equal to if not greater than do the older subjects, and in addition, much training of practical value. Having established itself in this respect, the next step is to so present the fundamental processes and the study of industrial materials as to instill an industrial meaning into education.

EIGHTH GRADE BOYS ASSEMBLING THE FRAMEWORK OF A 24 FT. BENCH FOR METAL WORKING SHOP, MENOMINEE, MICHIGAN

"The object of manual training is to lead the thinker to create more and the worker to think more." We must instill industrial meaning into industry as an antidote for the soulless monotony of machine tending. The mind of the worker must be so stored that the trained imagination shall drive beyond into the broader fields employing initiative, inventiveness and scientific executive ability. We must prepare the industrial worker to take pleasure and pride in his work as did the old artisan, by enabling

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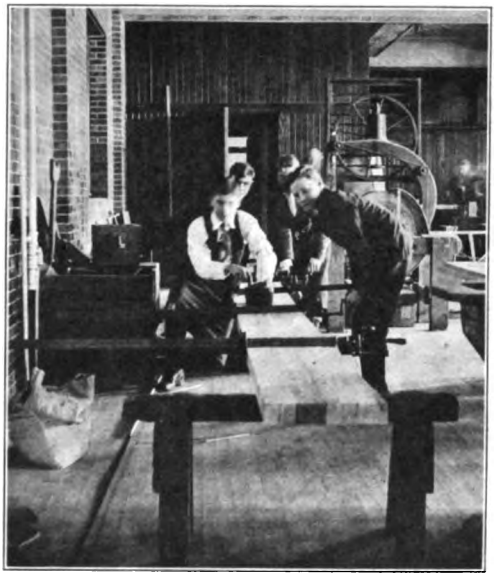
him to comprehend the whole industrial process, and feel that he is an important part of the world's great work. At the same time we must maintain that technical, cultural and disciplinary training which has won us our place in the educational system. We must apply art to industry, see that our constructions embody strength, beauty, due proportion and a just correspondence in all their parts.

It is probably the concensus of opinion, among educational leaders that, for relatively small cities, the junior high school should (in addition to the regular work) take the place of the prevocational school, elementary industrial school, intermediate and shop school; that industrial arts courses in the junior high school be extensive rather than intensive, should differentiate between pupils to fit their individual adaptations and abilities, should give a variety of training in fundamental materials and processes, aim at furnishing vocational guidance in industrial pursuits, aim at industrial thought development, hold to cultural training in good design and proportions, and maintain a high order of technical training in the various processes taught.

Manual training in the junior high school may be considered as having four outlets for which it is preparing its students: namely, training boys to enter the industries at the end of the compulsory school period; training boys who are to complete the senior high school preparatory to entering the trades and working up to foremen and superintendents in industrial shops; training and selection of boys to go on into higher education and become captains of industry; and the elimination of those boys not adapted to industrial pursuits. Each year's work in the junior high school should represent a unit in itself—something definite for the boy who perchance has to leave school at the end of the year. He should feel that he has acquired knowledge and skill the better fitting him to sell his services in some particular industry. At the same time there should be continuity of purpose in the three junior high school years, thus making his course a unit.



NINTH GRADE BOYS ASSEMBLING TOP OF 24 FT. BENCH FOR METAL SHOP, MENOMINEE, MICHIGAN

The junior high school manual training lays a foundation in the fundamental processes with a wide variety of materials and assists in the choice of a line of work to be followed in the senior high school. Manual training in the senior high school should be more intensive in its nature. While the work of the tenth and half of the eleventh years continues to introduce new processes in the materials experienced during the first three years, the training and content have more of a trade nature. The pupil in the later eleventh and twelfth years should have decided to follow some particular line of effort, and should get training which will make him capable of rapid progress while learning his trade in the commercial shop.

After several years of creditable work in

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manual training conducted in two basement rooms; and after being subjected to much educational propaganda along the line of the above discussion, Menominee, Michigan, became convinced of the advantages to be derived from having such a plant, and in the mid-winter of 1916-17, opened a junior-senior high school on the "six and six" plan, which includes departments in physical training, household arts and manual training as complete as a city of 10,000 people need afford.

As to the general organization, all pupils from the seventh grade up attend school five seventy-five minute periods daily. They are in school from 8:00 to 12:00 A. M. and from 1:30 to 4:00 P. M.—a total of six and one-half hours. Regular pupils have three academic subjects (elective in part) of seventy-five minute periods each. About thirty-five minutes is devoted to recitation and forty minutes to study under supervision of the classroom teacher. Each student of the junior high school (grades 7, 8, 9) is required to take daily full periods of physical training and either household arts or manual training. Those in the senior high school may elect in like manner, and practically all do so. Music takes the place of physical training two half-periods per week. The physical training is divided between indoor gymnasium work, outdoor games and swimming. Thus the apparently long day is relieved by the physical activities of the physical and industrial training.

Thruout our whole manual training course, except in the seventh grade, where the boy is learning the very elementary processes, (and in this grade when possible) the product of the department is planned and made for school use. It is probably more difficult to organize the work so that each pupil will receive the training adapted to his stage of development, but so far as I am able to observe, the interest in the work is not injured. It puts the pupils on a more equal level. It is sometimes a strain for a poor boy to purchase the piece of furniture he is able to make under the individual project system. It encourages a spirit of doing something for the school. There is more altruism in the pupils' attitude toward the school. The product of the shops more than pays for the cost of materials for the department.

As regards the course of study in manual training, we divide the school year into a number of parts depending upon the number of materials in which we offer instruction. For the seventh grade we offer drawing, elementary woodwork, elementary cold metal work and printing. The purpose is to teach the elements of freehand and mechanical drawing, the fundamental uses of the woodworking bench tools, to give an acquaintance experience with metals, thru elementary processes with cold iron, and to motivate English work and teach the elements of printing. The metal work involves the processes of measuring, cutting on hardie, bending, turning a hook, chiseling, drilling, countersinking, riveting, filing, threading, tapping, hack sawing, polishing and finishing. Some of the projects are: wire hook for coat or skirt hanger, hose clip, angle iron, drawer pull, window lift, door hasp, hook and staple, shoe scraper, can opener, shelf bracket, calipers, camp kettle support. For the eighth grade we offer drawing, woodwork, printing and electrical construction. The drawing consists of freehand and mechanical drawings of architectural elements, planning woodshop projects, projection and development of simple geometric solids. The woodworking continues that of the seventh grade with elements of carpentry and simple cabinet constructions. The printing continues that of the seventh grade. The purpose of the electrical construction is to arouse an interest in the electrical field and teach the elementary principles of elec-

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tricity and magnetism. For the ninth grade one-third of the year is devoted to drawing, one-half to cabinet making and wood-turning, and one-sixth to forging. The drawing teaches working drawing of shop projects, details of construction, inking tracings and continues the projection and development work. The cabinet making consists of making school furniture, introducing the group method and the use of student foremen. The forging is offered to give a further acquaintance with metal work as an aid to future choice of school work or vocational employment.

For the tenth grade one-half the time is devoted to pattern making as preparatory for the next two years work or for entering the trade. Thirteen weeks is devoted to drawing, eight to elements of machine drawing and five to house planning and elements of architectural drawing. For the remaining six weeks, squads of six to eight students under direction of an instructor have mill room practice in getting out stock for all classes, machining such work as is necessary, filing saws, and general repairs about the shop. In the eleventh grade those interested in iron work take one-third each, of forging, machine shop practice, and elementary machine drawing. Those interested in woodwork take architectural drawing, cabinet design and advanced cabinet construction. For the twelfth year there are full year elective courses enabling seniors to specialize in the work for which their previous work has proven them especially fitted: Machine shop, machine or architectural drawing and printing.

We now have left to mention the boy who on entering the junior high school knows that he will not continue thru the senior high school, and the boy 14 years old or older who is in the fifth grade or above and two or more years behind his grade—he who has been quitting school at the first opportunity and drifting into the "blind alley" job and a period of wasted years before settling upon a real vocation. "The world is full of the wrecks of human characters, who are such largely because of the single fault of their never having been trained scientifically in a vocational way," says William McKeever.

For these fellows, we offer two-fifths shopwork and drawing, two-fifths academic work and one-fifth physical training. During one year they get the industrial work of the seventh grade. While this work is extensive in content, the training is strictly practical, of a vocational nature and such as a boy, obliged to go to work, will find of immediate value.

The second year of this special students course should offer definite vocational training thru devoting two-fifths of the day to one vocation chosen from carpentry, pattern making, printing, elementary machine shop practice. This work can be given in the regular high school classes in the same subjects, the instructor giving attention to the particular aim of these students. This arrangement provides highly specialized training for a small number of students in any particular subject without the expense of a special trade teacher, which makes such training prohibitive for cities of our size.

Boys finishing this course have the equivalent of two years' high school credits in manual training, and a good start toward learning a trade. Those finishing the first year only have an introduction to woodwork, iron work, printing, electrical construction, and enough knowledge of mechanical drawing to enable them to read ordinary blue prints.

Dr. S. A. Knapp said: "I would like to impress the importance of an education in common things for common people, as opposed to the exceptional and the remote and

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the extraordinary. A great nation is not the outgrowth of a few of genius, but the superlative worth of a great common people. Unless the main object of all education for the masses is the making of a great common people, we shall fail. If our institutions are to be preserved we must make greatness common."

REACHING THE BOY WHO HAS FAILED IN SCHOOL STUDIES

SAMUEL S. SOLENDER
Principal of Technical Schools, Hebrew Sheltering Guardian Society, Pleasantville, New York

IT IS unfortunate that our general scheme of education in the public schools is so formal and rigid that a boy who cannot keep pace with the progress of the class must fall by the wayside. Many boys have had their careers handicapped because they happened, for one reason or another, to be considerably over-age for their grades, and were unable to assimilate academic studies. Our present school system, except in a few cases, is planned for the normal boy. The dull, the backward, and the slow must remain behind. The boy who at 14 or 15 finds himself in a very low class with boys several years younger than he is, suddenly realizes that he is out of place. While he is not necessarily a bad boy, he is a nuisance to the teachers. His stay in school may be characterized as "doing time"—waiting till he is old enough to obtain working papers. He is dissatisfied and unhappy, and at the very first opportunity, drops out of school. The boy next finds himself in an unskilled line of work such as errand boy, store clerk, wagon boy, or messenger boy. To such a boy the school has closed its doors. Later it is difficult to awaken an interest in night school work, and almost impossible to interest him in further education.

What I have thus far described is common in schools which have a one-sided curriculum, namely, academic. This kind of education is necessary, but when divorced from contact with industrial courses taken simultaneously, it falls short. The school should offer both academic and industrial courses, so that while it is educating in the three R's, it should also function in an industrial way toward making better workers. The writer does not undervalue the importance of an academic training, but does deplore the one-sided education which is offered in most public schools. Our school system is lacking on the side of industrial training which fits a man for the shop and for the farm. This is most serious, for no one can look at our people without realizing that industrial training is one of the most potent factors in national development. Schools which have a manual training department where the boys learn to make sleeve-boards and coat-hangers, cannot be said to be doing industrial or prevocational work. The schools must be equipped to offer general industrial courses in various industries leading to a "self-finding" or "try-out" period, thence to vocational specialization in a line of work at which the boy has shown aptitude and proficiency.

The educational scheme of the Hebrew Sheltering Guardian Society is so planned that an academic, industrial and a technical training is not only offered, but obligatory upon all children. The training begins when the child is admitted to the institution, somewhere between 7 and 8 years of age. His schedule of technical work is carefully planned, and includes several forms, beginning with simple toy problems in wood, leading up thru the grades to advanced study of machine shop practice, printing, electricity, mechanical drawing,

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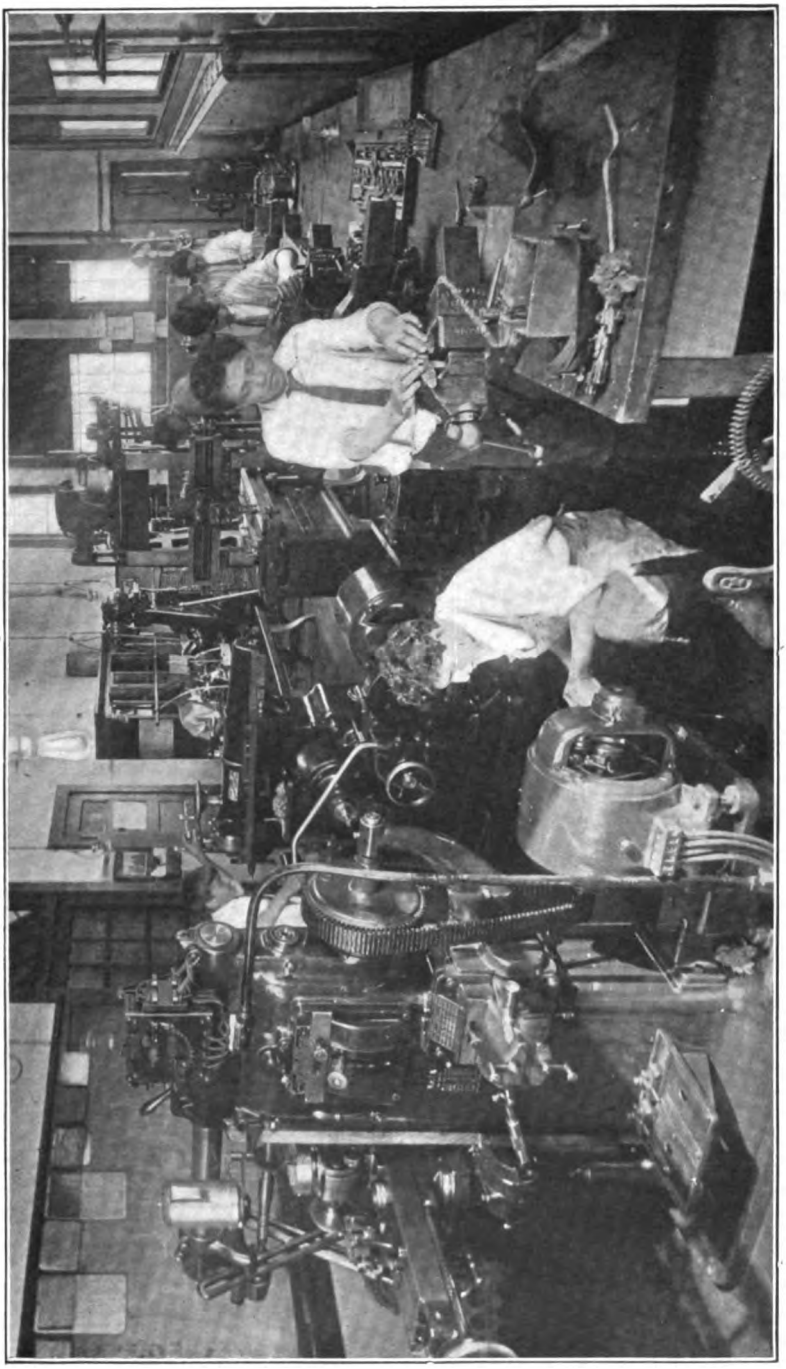

WHERE GOOD MACHINISTS ARE TRAINED

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commercial branches, etc. The work divides itself into three distinct groupings.

(1)—The manual training, or practical arts.

(2)—The period of "self-finding" or "try-out," and

(3)—The period of vocational specialization.

Every boy is given an opportunity to pass thru the "self-finding" or "try-out" period where he becomes familiar with the machine shop, the printing shop, wireless telegraphy, electrical shop, commercial room, etc. It is only after he has spent one year in this second period that he is called upon to make a vocational choice based on the courses thus far pursued. His period of specialization is not limited, but is sufficiently long to meet the needs of the particular boy. But this is for the average boy who is holding his own in the class, is not over-age and does not present a school problem.

What about the other boy who has reached the point of "saturation" and can no longer assimilate academic instruction. This boy has either not reached the "self-finding" stage of our work or has just entered into it. The boy for example is only 14 years of age, and in grade 5B. He finds himself out of place, with many younger by several years than himself. He is unhappy and wants to "specialize" as it is known in our school. It has been our experience that before a boy reaches this stage, he has already been a frequent visitor to the shops, and become acquainted with the instructors in the various branches. When such a case is known to exist, a conference is held between the superintendent of the institution, the principal of the high school, and the principal of the technical schools, to which is later called in the boy whose case is being discussed. It is decided that the boy divide his time between academic instruction and organized work in the various shops for a while as a trial period, before being definitely assigned to one or the other special lines of work. This schedule is in force for only a very short period in order to enable the boy to find himself "vocationally." Another conference is held at which it is decided to let the boy drop the greater part of his academic work retaining only fundamental instruction in the three R's and devote the remainder of his time to the special vocational work which he has selected, and for which he has shown fitness. The writer has had the pleasure of supervising this important phase of the technical school work in the case of a number of boys who have been assigned to special vocational work in this way.

The boys usually enter the class in a happy frame of mind, for they have left academic school behind them. A new spirit is immediately evident. They are happy, eager to do anything in the shops, for they are in their element when they don't have to study lessons. In the case of one boy, thus assigned, the writer has had an experience which was most encouraging. The boy had been finally assigned to the machine shop, and in a very short time, the instructor reported that the boy was holding his own quite well. He seemed very happy and expressed his appreciation for the opportunity to specialize. School had assumed a new meaning to him. It was very interesting to note that tho he had been in the machine shop for only a very short time, he vied with others in the class who had received considerably more academic instruction. The boy realized that he was now getting something out of school. The progress of this boy was remarkable. He had learned to use his hands skillfully, and to express himself thru his hands in a way that he would never have been able to do had he been permitted to remain in the academic department of the school. He

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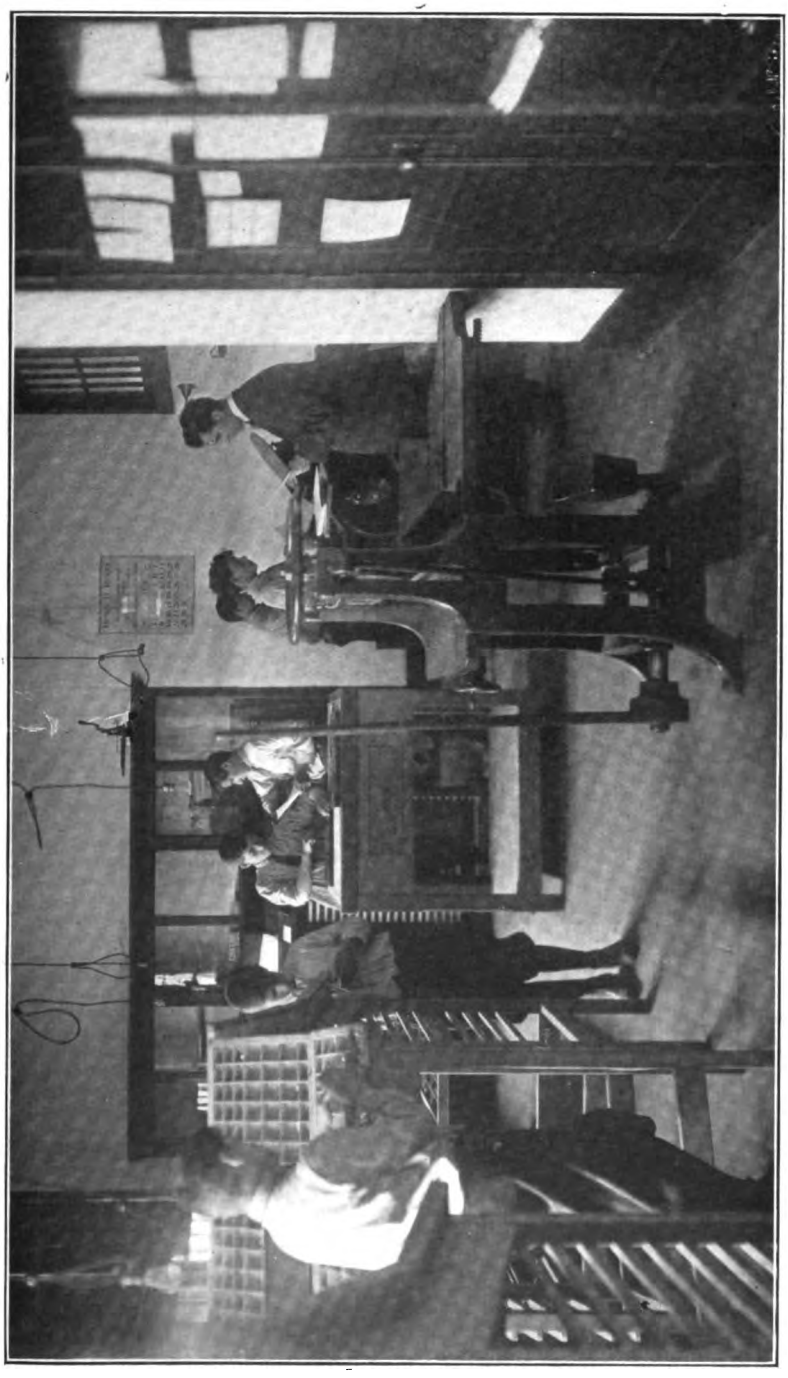

WHERE MOST OF OUR PRINTING IS DONE

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was encouraged by his machine shop work to know something about decimals, and work out arithmetical problems, and it was interesting to note how arithmetic had assumed a different meaning when applied to the actual needs of his work. These boys were also encouraged to read some of the books from the carefully chosen technical school library.

When the time arrived for the boys to be officially discharged from the institution, each one actually felt himself fitted to enter upon a skilled line of work. The school felt a keen pride in being able to send out these boys with "technical training and experience," which they would be able to capitalize in the world outside.

The writer has kept in touch with the progress of the boys, who during the past several years have done various kinds of work related to their vocation. Today, one of these boys is a mechanic on a large oil tanker which has made several trips to leading European ports and back again. Another is a skilled worker in one of our munition plants, and a third is a carpenter in one of the large shipbuilding plants of the country.

The school points to these boys with a feeling of pride, and watches their progress with keen interest. The experiment has inspired the work of the school to such an extent that it feels capable of coping with any problem which an individual may present without detriment to the scheme or schedule of the class work. It is only in this way that a school can do justice to its pupils. It is only in this way that the school can train for democracy and right citizenship.

TEACHING OXY-ACETYLENE WELDING

III. TYPICAL LESSONS

LIEUTENANT CYRUS RICKEL
Camp Herring, Peoria, Illinois

IN THE teaching of oxy-acetylene welding in educational institutions, the most important part of the work consists in bringing out fully to the students the possibilities of this art, the many difficulties to be encountered and the best way to overcome them, with reasons for the same, and a clear understanding of commercial metals and their physical and chemical properties thru a series of interesting, illustrated lectures. These lectures should bring out the various fundamental principles involved in the respective subjects and not certain specific operations. To illustrate clearly, a lecture on *Steel Welding* will be given with questions, answers, and a discussion of the subject to bring out the reasons for the answer. (The questions and answers are taken from the intensified course of instruction as used by the Ordnance Army Welding School at Peoria, Ill. They may be obtained by request from the United States Welding Co., Minneapolis, Minn.)

The beginner in steel welding should confine himself strictly to the low carbon steels and to wrought iron, for the high carbon and alloyed steels are subjects for the expert welder only.

Question—Is the welding of steel more or less difficult than cast iron? Explain why.

Steel is much harder to weld than cast iron and is generally considered the hardest of all metals to fuse. Cast iron may be

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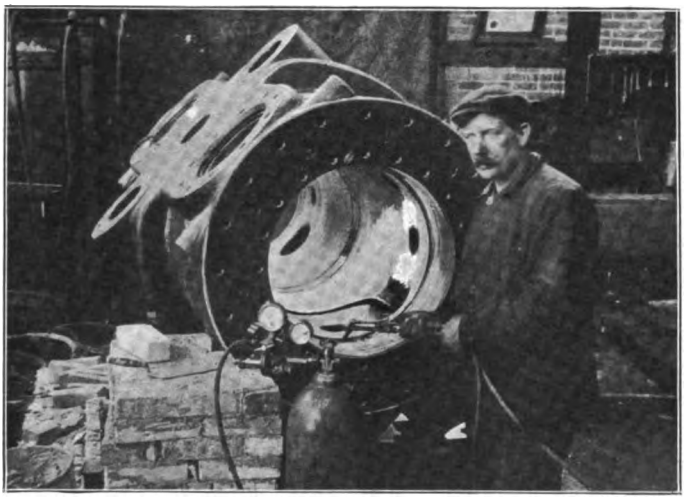
brought to a molten state and considerable quantity of the molten metal kept in that condition for some time without an appreciable change in the characteristics of the metal. The oxide formed in the melting of cast iron has a higher melting point than the iron itself and for that reason a flux is used to break up this oxide, or scale, allowing the metal to flow very easily. When steel is melted an oxide is also formed which melts at a lower temperature than the steel and which requires no flux to remove it, as it is broken up and destroyed by the flame. This necessitates the fusion of every part of the weld by the flame itself. No large quantity of molten metal can be kept in that condition for any length of time without changing the characteristics of the steel. When the flame is removed from molten steel the steel sets very quickly for the conductivity of heat by steel is much greater than cast iron. In steel welding the flame must be in contact with the metal at all times and it must be a strictly neutral flame or else oxygen and carbon will be introduced into the weld with injurious results to the weld.

Question—Why is the choice of the welding tips so important when working on steel? What will result if the tip is too large? Too small?

Steel is so easily burnt, or in other words oxidized, that unless the proper flame is used the metal will be effected. If the welding tip is too large the flame will also be too large, thus heating the metal more than is needed for fusion, allowing it to take up oxygen from the air and changing its physical characteristics. When steel is heated too much it loses its elasticity and its strength and is commonly said to have been burnt. If the welding tip is too small not enough heat is obtained for fusion and to break up the steel oxide formed.



SIXTEEN-TON LOCOMOTIVE STEAM CHEST, CRACKED IN THREE PLACES, WELDED IN 59 HOURS

Question—Why is the choice of a filler rod of a correct size so important for steel welding? What will happen if the filler rod is too large? If too small?

The filler rod should melt at the same time as the article itself and should retain its characteristics so that when introduced into the weld it will supply the required strength and elasticity. If the filler rod is too large the heat necessary to fuse the rod

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will be too much for the material to be welded and the material is liable to be fused first and burnt. If the filler rod is too small the rod itself is liable to be fused first and burnt before the material to be welded has reached the point of fusion.

BROKEN LOCOMOTIVE CYLINDER—THIS CAST IRON CYLINDER REPAIRED IN PLACE BY OXY-ACETYLENE WELDING TORCH. MICHIGAN CENTRAL RAILWAY

Question—What kind of a filler rod is used in welding steel? Give a general rule covering the relation of the filler rod to the metal being welded in all cases but one or two. Name one exception.

A steel filler rod is used in welding steel, and it should have the same chemical and physical properties as the steel to be welded. In many cases certain chemical properties of the steel may be lost to some extent in the fusion, and the filler rod should have an excess of this constituent so that when introduced into the weld it will supply what is destroyed. As a general rule filler rods should be of the same material as the metal to be welded. There are several exceptions to this rule, the most common being the welding of malleable iron, where a tough bronze is used as a filler rod. In welding cast steel a drawn steel filler rod is used.

Question—Is a flux necessary in welding steel? Explain why.

A flux is not necessary in the welding of steel. The purpose of the flux in welding is to break up the oxide, which forms when heat is introduced, if that oxide cannot be

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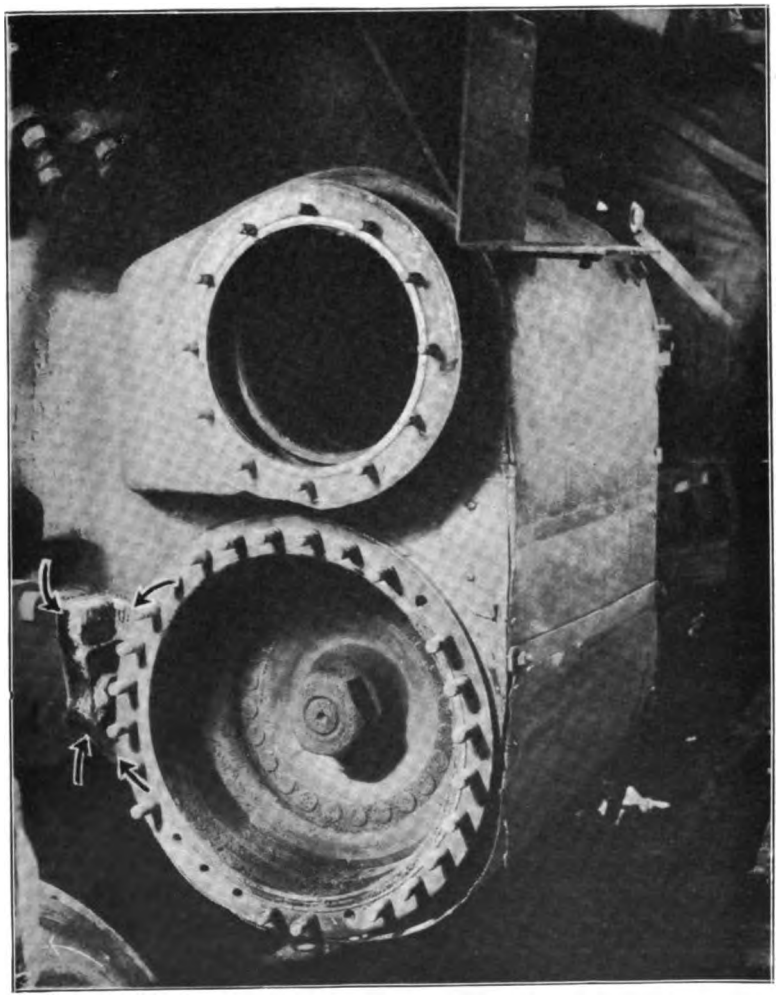
eliminated in some other manner. The oxide formed by the fusion of steel melts at a lower temperature than the steel and thus if the welding flame is brought into contact with each part of the weld the oxide will be destroyed without the use of a flux. Too many welders consider that the use of a flux is all that is necessary to secure a successful weld, but such is not the case. The respective oxides must be broken up before a fusion can be obtained, and the use of a flux simply gives the welder the opportunity to fuse two masses of clean molten metal.

Question—How is the flame adjusted for steel welding? What kind of a flame is generally used in finishing steel work? Why is this done?



BROKEN SADDLE CONNECTING LOCOMOTIVE CYLINDERS TO THE FRAME. REPAIRED IN PLACE BY OXY-ACETYLENE WELDING

A strictly neutral flame must be used at all times in the welding of steel. Steel when molten has a great affinity for oxygen, carbon and other impurities and will

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readily absorb them. If the flame has not a correct adjustment but has an excess of oxygen it burns the metal very fast, and on the other hand if it has an excess of acetylene, whose main constituent is carbon, the carbon will be introduced into the weld, making the steel hard and brittle. In finishing a steel weld, which may have rough edges to be removed, an oxidizing flame is used. This burns and quickly removes the excess metal.

Question—How is the flame held when executing a steel weld? How is the filler rod held when making a steel weld?

In starting a steel weld the flame is held at right angles to the plane of the metal to be welded so that the tip of the cone will just touch the surface. The flame is moved up and down the line of weld until the metal reaches the point of fusion. The flame is then brought down to the bottom of the "V" until the metal has melted and flowed together, when it is quickly removed. This gives the metal a chance to set. After the bottom of the weld has been fused, filler rod is added. The torch flame is turned away from the operator, hitting the work at an angle of 45 to 60 degrees. The filler rod is immersed in the molten metal, which piles up behind the flame, and is itself held at all times back of the flame. By combining the force of the flame with the use of the filler rod the molten metal may be guided wherever desired and may be banked up in the rear of the flame as much as half an inch.

Question—Is it necessary to "V" out on steel the same as on cast iron? Explain why.

It is necessary to "V" out steel, but not in quite the same manner as cast iron. The welding flame has a much greater penetration into steel than it has into cast iron and for this reason steel work should be 3/16" thick or more before being ground off. If the steel edges are too sharp they will be easily burnt, and a hole will appear where it is not desired. As a steel weld should be made quickly it is desirable that as small a section as possible be cut out, for all removed must be replaced.

Question—Is a steel weld as strong as the original metal if not built up? Explain why.

A steel weld generally speaking is not as strong as the original metal. When rolled or drawn steel or steel specially treated is welded the welded section has not the characteristics of the original steel and is therefore weaker. A weld is at all times a casting and thus a section of cast steel is introduced. When welding cast steel the weld is in many cases much stronger than the original casting for cast steel castings are often coarse grained and full of blowholes. By building up the welded section slightly, strength is added to the weld.

Question—Is the same provision made for expansion and contraction on steel as on cast iron? Give reasons for so thinking.

The same provision is not made for expansion and contraction on steel as on cast iron in the majority of cases. Cast iron is a very brittle metal and will break before it will bend or absorb strain, while steel is more ductile and elastic and will twist and bend before breaking. However, the important points of contractions cannot be neglected in steel work any more than they can on other work. Contraction must be particularly considered on large sheet metal and sheet steel work.

These questions are only the first of four sets covering the welding of steel but give an idea of the manner in which the various points are brought out and explained. Each lecture room should have a portable apparatus and a welding table so that the

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various fundamental principles may be demonstrated as discussed. The work in the shop also should go hand in hand with the lecture work and each student should be able to point out and recognize the various faults found in his weld. There are many fundamental principles which are applicable to all of the commercial metals and these points should be brought out under each metal for the sake of repetition. In this way these points are hammered home to the student and he realizes that they are the cornerstone of the welding art.

Oxy-acetylene welding can not be learned by watching others work altho observation may assist the beginner in many cases. Actual torch practice together with brainwork in the application of the theoretical principles, and the power of "I Will," produces the expert welder. For the students who earnestly apply themselves to the carefully given course of instruction there is every reason to believe that success will be theirs.

INDUSTRIAL WORK IN ENGLISH ELEMENTARY SCHOOLS III

WILLIAM BRADBURN
Head Master of Municipal School, Old Hall Drive, Gorton, Manchester, England

IN THE previous article reference was made to the evidence given by William Davis, a witness before a select committee of the House of Commons on education in 1834, and to a School of Industry, The Gower's Walk School, established by him. It will now be interesting to review the evidence of another witness before the same select committee, Mr. William Allen, treasurer of the British and Foreign Schools' Society. Mr. Allen appears to have been considerably attracted towards the establishment of industrial work in schools by his observation of the educational institutions of the Swiss reformer, M. de Fellenberg.[1] Mr. Allen established a comparatively small school in his own grounds at Linfield, Sussex. Three forms of industry were taught in connection with it, viz., printing, agriculture and weaving.

The School of Industry appears to have been separated, yet closely connected with the elementary department, in which reading, writing and arithmetic formed the bulk of the curriculum, since no boy was compelled to attend it, and some chose printing, some agriculture and some weaving. Within a year and a half from the opening of the school 7000 small volumes had been printed by the children. Six of them were compositors, and Mr. Allen gave it as his opinion that they could compose almost as well as men, tho not so quickly.

In regard to the agricultural side of the work Mr. Allen was convinced that its usefulness could be greatly enlarged, and he said: "I mean to make it much more perfect than it is now as a school of agriculture."

In 1835 Mr. Allen established another school in which he lodged, boarded and clothed twelve boys, free of charge. The school was worked on the "Manual Labour" system, and in 1839 was in successful operation as well as being in process of enlargement. The chief manual labour was gardening, but when weather conditions prevented this being carried on the boys were employed, some in weaving linen, some in the printing shop, and some in shoemaking. To engender respect for their own property, as well as to encourage the desire for privacy and study, each boy had a little

[1] A short account of M. de Fellenberg and his institutions will appear in a later article.

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apartment to himself, about eight feet square and ten feet high. These apartments were furnished with a bed, table and chair, and the boys were expected to keep them scrupulously clean and neat, as well as to make their own beds, clean their own shoes, etc. In short, they were taught to do as much for themselves as possible.

Each boy's garden consisted of 26 rods. In two of these rods the boy was allowed to grow flowers or anything else he desired. He was obliged to set apart 12 rods for the growing of potatoes and the remaining 12 for the cultivation of corn. No charge for anything except manure. The boys were allowed to keep the remaining profits for pocket-money which, in 1836 averaged £1-6-8 each, or rather more than 6 d per week.

The ordinary school curriculum embraced reading, writing, arithmetic, English grammar, geography, the use of the globe, and hand measuring. Each boy was required to keep a diary in which he entered the time spent in manual labour, and also the time occupied in the study of various school subjects.

Thruout the whole country, only a very few schools of the type instanced by Mr. Allen were established. Such were those founded by Lord Chichester on his own estate near Brighton, Sussex, and those at Baterburg, Essex, by the Rev. William Pearson of Springfield Rectory, near Chelmsford, for the children residing within the Chelmsford Union.

GIRLS' SCHOOLS OF INDUSTRY: THE BRENTFORD SCHOOL

A type of the girls' Schools of Industry, which were in existence during the earlier years of the 19th Century, was found at Brentford. This school was established by a Mrs. Trimmer, about 1784, and for more than fifty years was managed by that lady and her daughters. In it plain needlework was blended with the subjects usually taught in an elementary school. There were generally from 100 to 120 girls in attendance. Household work was not followed systematically. Some of the girls, however, were allowed to clean the school each week, and one was employed to assist the mistress in the school house occasionally, and was called a housemaid during the time so employed.

SCHOOL IN CONNECTION WITH MILITARY ASYLUM

A School of Industry of a somewhat different type was that in connection with the Military Asylum, Chelsea, near London. The institution partook of the character of a modern industrial school and a military establishment, whilst the elementary instruction followed the system originated by Dr. Bell. The children, all boys, the sons of soldiers, privates and non-commissioned officers, were boarded and clothed by the institution. The character of its general management and discipline was wholly military, the boys being sergeants, corporals, etc., whilst the head schoolmaster was the sergeant major.

During the war, i. e., until about 1815, as many as 1250 boys were lodged in the asylum at one time. In 1834 there were only about 400 in residence. They were received from the age of five, tho as a rule, their average age on admission was between eight and nine, whilst the length of their stay averaged between four and five years. The subjects of elementary instruction were reading, writing, arithmetic and singing. The industrial occupations were based upon the most utilitarian principles, for the boys made everything they wore, being taught to make their own clothes, shirts and boots, and to knit their own stockings.

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It is scarcely to be expected otherwise than that these occupations were taught most mechanically, and with little regard for their educational value, seeing that the instructors were all soldiers without any educational enthusiasm or outlook, to whom education meant nothing more than the attainment of the merest rudiments of learning. No doubt the instructors considered they had thoroly carried out their duty to the boy if he were able on leaving the school to follow the craft they had taught him. Many of the boys did become craftsmen, tailors or shoemakers principally, when they left the institution.

It must be said, however, that to those who became soldiers, and the majority did so, that the industrial work of the school proved very valuable, for they found it of great convenience and utility to be able to repair their own boots and clothes.

The successors of this school, especially in the mechanical methods of conducting its industrial occupations, were the industrial and reformatory schools of a somewhat later period.

Any inquiry into education at the present juncture is big with issues of National fate. In the great work of reconstruction which lies ahead there are aims to be set before us which will try, no less searchingly than war itself, the temper and enduring qualities of our race; and in the realization of each and all of these, education with its stimulus and discipline, must be our stand-by. We have to perfect the civilization for which our men have shed their blood and our women their tears; to establish new standards of value in our judgment of what makes life worth living, more wholesome and more restrained ideals of behavior and recreation, finer traditions of cooperation and kindly fellowship between class and class and between man and man. These are tasks for a nation of trained character and robust physique, a nation alert to the things of the spirit, reverential of knowledge, reverential of its teachers, and generous in its estimate of what the production and maintenance of good teachers inevitably cost.—Report of the English committee on juvenile education in relation to employment after the war.

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EDITORIAL REVIEW OF THE MONTH

THE CHICAGO CONVENTION

THE fifth convention of the Vocational Education Association of the Middle West was perfectly characteristic of that organization. It was spirited and democratic in full measure. It was held in Chicago, and this year on the 16th, 17th and 18th of January at the Congress Hotel. The intensive program of addresses was just the kind we have come to expect from William J. Bogan, chairman of the program committee. From beginning to end the convention seemed to pulsate in harmony with the busy life of the "Loop District," which is the heart not only of Chicago but of the Middle West.

The first session brought together Dean Andrew F. West of Princeton University (whose address constitutes the leading article in this issue), Dr. David Snedden of Columbia University and Miss Florence Marshall of the Manhattan Trade School for Girls, New York City. On Friday afternoon President G. Stanley Hall of Clark University gave an address long to be remembered on the "Practical Applications of Psychology as Developed by the War." On the same program was President Carroll G. Pearse of the Milwaukee Normal School, Dr. William T. Bawden of the U. S. Bureau of Education, Miss Agnes Nestor, president of the Women's Trade Union League of Chicago, and Charles T. Clayton, director of the U. S. Training and Dilution Service, Washington, D. C. And so the program went on during the two days. It was sufficiently unified in arrangement and enough varied in content to hold the interest of the audience at every session. At times it was punctuated with marked difference of opinion.

SHALL THE SCHOOLS TRAIN MACHINE OPERATORS OR MECHANICS?

PERHAPS the most striking contrast of the entire convention was in the first and the last sessions in their interpretation of the kind of vocational education which we need in the future. The contrast was particularly striking between the statements of Professor Snedden of Columbia University and Stewart Schrimshaw, supervisor of apprentices for the state of Wisconsin. Professor Snedden seemed to see all problems from the viewpoint of quantity production on a large scale. In his vision the machine was always in the foreground. The man with skill of hand was hardly to be considered as a factor in industrial production or in education. He maintained that industrial education must take a new start: it must train machine operators instead of mechanics; only a few mechanics are needed. "The trouble is we are still thinking in the handicraft stage." Professor Snedden would have a young man learn to run a machine and then take a job working on that machine. After a while he would have him return to school and learn to operate another. Then he would go to work again, and later return to school again. Vocational education would thus be arranged in "a series of steps"—intensive short courses—and it must not stop till the man is thirty years of age. Meanwhile the man's general education should continue after working hours.

In striking contrast with this was the viewpoint of Mr. Schrimshaw, who said that a school which trains a man in a few days to run a machine and then sends him out into industry is not a worthy public institution. "If a manufacturer wants to do

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this for his employes let him do it, but it is not education. A vestibule school is not an educational institution."

This contrast of statement and viewpoint brings to mind a question we have often asked: What part of vocational education is the proper function of the public schools, and what part belongs to the factory? The schools now recognize that they ought to render more service in this direction; the large factories have become aware of the fact that in the interests of economy and the morale of the working force they must maintain vestibule schools and improvement classes. But primarily these are selfish business enterprises, however much benefit they may be to the employes. They are a part of the business institution which is financially profitable. The factory, if sufficiently large in size, can make more money with such a school than without one. If this is so, why not let the school spend its money in trying to make mechanics? The factory will quickly make operators out of them if it needs to do so, and there is always a shortage of intelligent, efficient mechanics. As Mr. Schrimshaw said, "The dilution of labor may prove to be a delusion of labor, especially in peace times." Moreover, the training of a mechanic is a task worthy of the public school, whether it attempts to do it all, as in a unit trade course, or only contribute a part, as under the part-time cooperative plan, or while pursuing a course in general education.

SEPARATE OR TOGETHER?

ANOTHER contrast arose out of the impression gained from the address of Professor Snedden and somewhat supported, or, at least taken for granted by Dean West, that vocational eductaion and general education are and should be separate from each other. While it is true that Dean West's address was in large measure a plea for the unification of the educational system of the country, yet to some of his hearers the plea seemed unnecessary in the Middle West, unless it be for the future, because as a rule in this part of the country no sharp lines have been drawn between vocational and general education—at least, not until the passage of the Smith-Hughes law forced such a line of separation into the schools. Issue was taken on this point by Director George N. Cannan of Lewis Institute who deplored the separation involved in Dr. Snedden's statements. He made a plea for allowing vocational and general education to profit by living together in the same institution.

Director Cannan's position is the same as that taken by the N. E. A. Commission on the Reorganization of Secondary Education of which Clarence D. Kingsley is the chairman. In its recently published bulletin (U. S. Bureau of Education, Bulletin, 1918, No. 35) the commission holds that the division of education into separate stages, the first general and the second vocational is unsound. Health needs are important at all stages; the vocational aspect is valuable even in the early stages as giving greater purposefulness to schooling; while preparation for citizenship and the worthy use of leisure involve phases which require maturity on the part of the pupil.

> Furthermore, it is only as the pupil sees his vocation in relation to his citizenship and his citizenship in the light of his vocation that he will be prepared for effective membership in an industrial democracy. Consequently, the Commission enters its protest against any and all plans, however well intended, which are in danger of divorcing vocational and social-civic education. It stands squarely for the infusion of vocation with the spirit of service and for the utilization of culture by genuine contact with the world's work.

With secondary education reorganized so as to contribute more directly to the health, good citizenship, vocational efficiency, sterling character, and the ability

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to use leisure wisely, the Commission holds that secondary education is essential for all the youth of the nation. It urges legislation whereby all young people, whether employed or not, shall be required to attend the secondary school for at least eight hours in each week that the schools are in session.

No single piece of educational legislation could do more to raise the level of intelligence and efficiency and to insure the welfare of democracy. Such part-time or continuation education should not be exclusively vocational. It should be conducted in comprehensive high schools, rather than in separate continuation schools as is the custom in less democratic societies. By this plan the American high school can become uniquely American, welding by its influence all young people of the community into one civic whole, thus becoming a living embodiment of the unity which should over-tower all diversities within the body politic.

THE NEW HUMANISM

NO address during the Chicago Convention so over-crowded the room with attentive listeners as that of President G. Stanley Hall of Clark University. After reviewing in a masterly way, in untechnical language, the achievements of psychologists during the war, he said:

In this moment of transition between the unprecedented achievements of creating in two years and equipping an Army of four million men, training and transporting one-half of them four thousand miles and conquering the greatest military power on earth, a thing that makes even our own great industrial achievements before seem a little pale and ineffective, and on the other hand the great business revival that seems to be just at hand, what are our prime duties? I answér:

(1) To take a broader view of our problems in general and to realize the unique opportunities of the hour and to feel our very grave responsibility. Our training for vocationalists is not yet broad or long enough. However scientific industry may become, it must not tend to *kultur* to the neglect of *culture*. It was a joy to learn of one thousand members of our American Society of Engineers applauding to an echo the address of their President, Hollis, urging them not to forget that spiritual must dominate material agencies in their work, lest the latter become a frankenstein. Humanism, now highly material in our day and land, is not assured or even helped by a little Latin nor even art or literature, but we must chiefly develop it right out of the heart of each of the chief occupations themselves. The stories of its processes and inventions, the sources of its material, the destiny of its products, its role in modern civilization for the individual and the country—this is a new old culture element which can give each intelligent workman in the world today a new sense of wide relations and of essential service to mankind. As an aid for teaching this we already have a choice little but as yet almost unknown literature which could and should be gathered and increased, for a little training here goes far toward the correcting of the growing discontent which goes with specialization of labor. A few leaders are already beginning to awake to the possibilities in this direction.

THE NEW TECHNICAL HIGH SCHOOL COURSE IN BROOKLYN

SIGNIFICANT changes in the curriculum of the Brooklyn Manual Training High School came to our attention a short time ago and we wrote to the principal of the school, Dr. Horace M. Snyder, for the facts. A few days ago we received the following from Dr. Snyder:

Profound changes in the curriculum of the high schools of New York City are being made with a rapidity never before thought possible. In general, these changes are in response to an insistent demand on the part of the public that secondary education shall more adequately provide (1) definite training in the privileges, duties and responsibilities of citizenship; (2) training of vocational value to students leaving school before completion of the full four-year course; (3) a curriculum adapted to the varying aptitudes, capacities and probable future needs of a large majority instead of a small minority of high school pupils.

The first aim is being met by the general introduction of major courses in community civics, European history and economics. The second and third, by the introduction of a one-year commercial course and by a reorganization of the curriculum in various technical courses so as to

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provide technical instruction in the early years of the course.

A conspicuous illustration of this type of reorganization has taken place in the Manual Training High School of Brooklyn, the Board of Superintendents having organized a new technical high school course to replace the old manual training course.

The integrating factors in the technical course are English, mathematics, technical drawing, shop work, physical training and hygiene, each of which is required thruout the entire four years.

FIRST AND SECOND YEARS

There are no electives in the first and second years. Two primary aims governed the selection of material for these years. First, that the instruction offered should have definite vocational value for pupils leaving school at the end of the first or second year. Second, to offer a basis in practical experience and classroom instruction for the special "group election" provided in the last two years of the course.

To realize these aims ten periods per week are given to shopwork, affording experience and practice in all the wood and metal working shops. A course of five periods per week in industrial geography gives a cross-section of modern industry, including sources, study of raw materials, methods and processes of manufacture by products, transportation and markets. A similar course in industrial chemistry in the second year provides an introduction to the field of chemical industries. Instruction in English, mathematics and drawing is directly related to the fundamental technical aim of the course thru close correlation with instruction in technical subjects.

The work of the first year is so chosen that pupils may enter the course from junior high schools without loss, while graduates of our two-year trade schools may similarly register without loss for the last two years of the course.

THIRD AND FOURTH YEARS

Adaptability to special needs and aptitudes of pupils thru the plan of "group electives." At the end of the second year pupils may choose "elective groups," which aim directly at specific occupations and professions. These groups are

I. College (Technical) Preparatory.
II. Architecture and Building.
III. Chemical.
IV. Electrical.
V. Mechanical.
VI. Structural.

Physics and a varying assignment in shop and technical drawing, together with English, mathematics and American history and civics appear in each of these groups.

Shop practice and management, applied mechanics and strength of materials, physical measurements, steam and gas engine laboratory, generation and distribution of electrical power, alternating currents, qualitative and quantitative analyses, surveying, foreign languages and economics appear in one or more of them as they lend themselves to a realization of the special aim of the "group" as a whole.

Trade instruction finds no place in the technical course. The immediate earning power of a graduate may not be materially increased. It is, however, confidently expected that this course will aid him in securing a footing in his chosen field; that it will make possible rapid and substantial advancement in that field, and that it will lessen the number of unfortunate and impossible choices of vocation or profession.

THE SITUATION IN ILLINOIS

AT A meeting of the representative body of the Illinois State Teachers' Association on January 25, 1919, the following resolutions were adopted:

That we reaffirm our support of the unit system of vocational education and urge that the Legislature,

(a) Accept the provisions of the Smith-Hughes Act under the present Board, or one of similar nature, whose executive officer shall be the Superintendent of Public Instruction;

(b) make a sufficient state appropriation to match the Federal fund apportioned to Illinois, and

(c) amend the compulsory attendance law to provide that all youth between the ages of fourteen and eighteen in employment shall attend some continuation school for at least eight hours a week during the time such school is in operation, and that the wages of such youth shall be paid by their employer for the time spent in such school.

This resolution indicates that the representatives of the teachers are not interested in a thoro-going vocational education bill at the present time. They have not forgotten the fight on the Cooley Bill and some of them do not like the Smith-

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Hughes law in its present effect upon the schools. They wish to play safe.

On the other hand the State Federation of Labor asks for a comprehensive program by passing the following resolutions:

The most urgent educational matter before the

FROM THE PALMER COLLECTION, 18 CENTURY AMERICAN FURNITURE—METROPOLITAN MUSEUM OF ART

state during the coming year will be the necessity of the formal acceptance by our legislature of the conditions and benefits of the Smith-Hughes law, if Illinois is to continue to receive federal aid under that law. The prescribed conditions still leave the legislature a great deal of latitude and your committee recommends that this convention endorse the following principles to be incorporated in the necessary legislation.

1. Vocational education in Illinois should be under unit control.

2. A state appropriation for vocational education should be provided by a state vocational education tax, and should in any case be in addition tc an increased state distributive fund for general education.

3. Local boards of education should be enabled to raise money for vocational education by local taxation, all such tax levies to be strictly in addition to present or future taxes for general education.

4. The State Board for Vocational Education should consist of two representatives of education, two of labor, two of the employers, two of agriculture, of two women who have made a special study of women's work, and ex-officio of the State Superintendent of Public Instruction, who should be the chairman and executive officer of the Board. Traveling expenses and a substantial per diem compensation limited by law to a maximum number of days per year, should be provided for the members of the Board so that personal means or financial backing would not become a necessary qualification for membership.

5. This State Board should have broad administrative powers, and it should be its duty and responsibility to administer funds, to study vocational education and promote its advancement, to train teachers, to make surveys of conditions of industry and employment, to make reports and recommendations to the legislature, to organize, standardize, supervise, and approve or disapprove the work in industrial, agricultural, household arts, and commercial training.

6. Under the executive officer there should be a director for vocational education with special qualifications for the work. The State Board would appoint all such deputies upon the recommendation of the State Superintendent of Public Instruction. The State Board should have the power to appoint upon such recommendation such agents and assistants under these deputies as may be necessary. Adequate provisions for salaries and expenses should of course be made.

7. Your committee recommends the endorsement of the provision for local Advisory Committees urged by the A. F. of L.:

"Boards of Education or township trustees administering approved vocational schools and departments for industry, agriculture, or domestic science education shall, under a scheme to be approved by the State Board for Vocational Education, appoint an Advisory Committee composed of members representing local trades, industries and occupations.

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"It shall be the duty of the Advisory Committee to counsel with and advise the board and other school officials having the management and supervision of such schools and departments."

8. Short time specialized trade extension courses for journeymen mechanics should be provided in vocational schools where there is sufficient demand, so that present journeymen may become more efficient.

9. Before instruction is given in any specific trade, industrial surveys should be made to determine the opportunities and requirements in such trade, whether it is seasonable employment, extra hazardous, subject to occupational diseases, the number of people employed, the opportunities of securing positions and advancement, and the educational value of instruction in such trade.

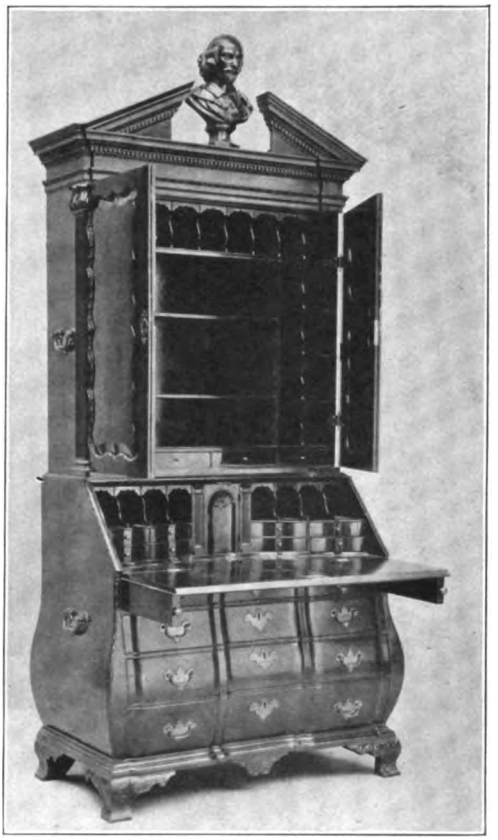
10. In all courses of study, and particularly in industrial and vocational courses, the privileges and obligations of intelligent citizenship must be taught vigorously and effectively and at least in all industrial and vocational courses, and unemasculated industrial history must be taught, which shall include an accurate account of the organization of workers and the results thereof, and shall also include a summary of all legislation, both state and federal, affecting the industries taught.

11. The development of vocational guidance and industrial education in both urban and rural communities, in proper relation to each other and to the needs of our democracy.

12. The provision of increased facilities in public normal schools for men and women in the trades who desire to prepare themselves for teaching industrial and vocational subjects, and the expansion of both state and federal educational facilities, so that we will be decreasingly dependent on private endowments in the educational field. In this connection we call your attention to the movement in one state to introduce into the state university in cooperation with the State Federation of Labor a course designed to prepare young men and women of labor for intelligent and effective leadership in the labor movement.

13. We heartily approve the vocational rehabilitation of the soldiers crippled in service, carried on by the Federal Board for Vocational Education, and urge that the same machinery be used to help restore the victims of industrial accidents to economic independence.

14. Your committee strongly urges the necessity of the enactment in Illinois of legislation establishing compulsory continuation schools for children after they leave school up to eighteen years of age, sessions aggregating not less than eight hours a week, to be held between 8 A. M. and 5 P. M., Saturdays excepted. Wisconsin and Pennsylvania have already taken similar action and New York seems about to follow. England and France while still in the stress of war, adopted comprehensive and thoro-going provisions.



FROM THE PALMER COLLECTION, 18 CENTURY AMERICAN FURNITURE

THE PALMER COLLECTION OF FURNITURE

THE photographs of furniture reproduced in this department were made available thru the courtesy of the Metropolitan Museum of Art, New York City. They represent some of the choice pieces in a collection recently acquired by the Museum. During

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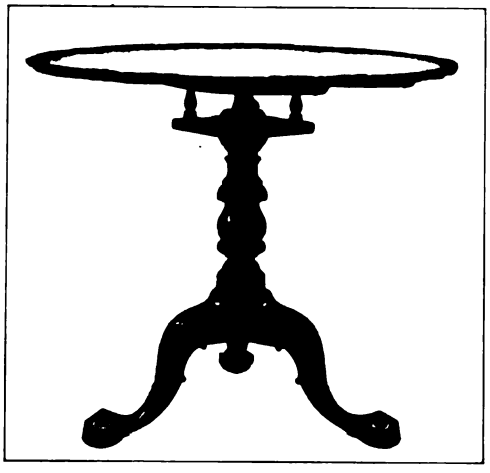
more than thirty years of patient and systematic searching, George S. Palmer of New London, Conn., brought together



FROM THE PALMER COLLECTION

perhaps the most notable collection of American furniture of the eighteenth century period. This collection, consisting of fifty-one pieces together with the Bolles collection, which includes furniture of the century following the landing of the Pilgrim Fathers, places the Metropolitan Museum permanently ahead of all other museums in this matter of early American Furniture.

THE BEST USE OF MACHINE TOOLS USED IN WAR WORK

THE latest movement to further industrial education in this country is the bill introduced in Congress on February 4 by Representative Charles P. Caldwell, of New York. The bill provides that the War Department apportion our surplus war machinery to the various educational institutions of the country giving courses that require such equipment, subject to return when demanded. The bill reads as follows:

To provide for further educational facilities by requiring the War Department to loan certain machine tools not in use for Government purposes to trade and technical schools and universities; and for other purposes.

Be it Enacted by the Senate and House of Representatives of the United States of America in Congress Assembled that the Secretary of War shall lend to trade and technical schools and universities and other recognized educational institutions which in the discretion of the Secretary of War should have such equipment, the machine tools suitable for their use which are owned by the United States of America, which are under the control of the War Department, and which are not being used for Government purposes;

Provided, however, that each institution so equipped shall be responsible to the United States of America, under regulations to be prescribed by the Secretary of War, for the proper care and safe return of such equipment when demanded, ordinary wear and tear excepted.

FROM THE PALMER COLLECTION, 18 CENTURY AMERICAN FURNITURE

The passage of this bill would be a boon to our educational institutions and quite in line with the purposes of the Smith-Hughes Act. In addition it would solve a labor problem that threatens, if all this machinery were thrown on the open market. Many suggestions have been offered for

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the disposition of our war machinery, but none has yet appeared that seems so worthy.

DEATH OF EARL A. WARNER

ANYONE who has known Professor Earl A. Warner of the George Peabody College for Teachers at all intimately must feel a distinct loss now that he has passed beyond. In so many ways his life embodied the ideals of beauty he taught that one feels that the world is poorer now that he has gone. Mr. Warner obtained his art training at the Chicago Art Institute and the Woodstock Art Colony before he came to Bradley Institute where he graduated as a teacher of manual training. After a year of teaching in Pittsburgh, Pa., he became the teacher of drawing and design at the Vocational Grammar and High School, Memphis, Tenn. From there he was called to take charge of the art work at the George Peabody College for Teachers, at Nashville, Tenn. In this position, during four years, he laid foundations for a great work and exerted a marked influence upon the school. President Payne is reported to have said of him, "He did more than any other one person to keep the daily life of the school happy and smooth." I recall his expressions of pleasure at being allowed the opportunity to take charge of arranging the flowers for the college chapel exercises. He used this as a means of teaching the art he loved and lived.

The following verses by one of Mr. Warner's students written on the occasion of a talk on flower arrangement is an illustration of his influence:

Jes' give 'im a bunch o' weeds
And a bowl!
An' that ol'
Heart of yours 'ill thank
Th' God on high
For th' sight a-sittin'
Before yo' eye!
An' ez days keep comin'
An' a-goin'
You're a-known'
They's a mighty lot o' goodness
In a soul
Thet gets all that beauty
Out o' weeds
An' a bowl!

A friend in writing about him has said: "The symmetry, sincerity, and harmony of his art controlled his character; while every charming flower arrangement and every delicate sketch from his hands was a genuine bit of his own rare personality. The eager motive of everything he did, in classroom and all outside activities, was to open the eyes of all to the beauty in the common things of life, and to show how teachers could and should help to make beauty prevail as a daily part of every home and every life, even the humblest."

FROM THE PALMER COLLECTION, 18 CENTURY AMERICAN FURNITURE

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WASHINGTON CORRESPONDENCE

INTERESTING LEGISLATIVE SITUATION

DURING the month of January the legislative situation at the Capitol has taken a number of interesting turns. It has been given out a number of times that economy is the watch-word, and that every possible dollar is to be pruned from all appropriation bills. At other times it has been asserted by those professing to know that Congress is in a mood to encourage a number of progressive, constructive enterprises—among them, education.

The advocates of the bill sponsored by the National Education Association, creating a Department of Education, which has come to be known as the "Hundred-Million-Dollar" Education Bill, have had several ups and downs. For a time all signs indicated favorable prospects for passage at this session; then opposition from certain quarters developed, which gave considerable concern until the objectors were identified and their objections met. Again the atmosphere cleared, and hopes went up. Just now as I write, however, some doubt again seems to have arisen as to the possibility of favorable action before March 4th.

At any rate Secretary Lane has personally interested himself in the support of a bill introduced in the Senate by Senator Hoke Smith, and in the House by Mr. Bankhead, providing roughly $12,500,000 annually for seven years for an attack on adult illiteracy and for the Americanization of the foreign-born. This is advocated as an emergency measure, the need for which was plainly disclosed by the revelations of the army draft system. There are millions of adults in this country who cannot read a circular letter of instructions or orders, who cannot read a danger warning or an appeal to conserve food or fuel. There are hundreds of thousands of farmers in the United States who, for the same reason, cannot be reached by Farmers' Bulletins or other government publications.

The same program, substantially, is included as one of the items in the more comprehensive bill, and I understand that Senator Smith and the N.E.A. are supporting it on the ground that if the latter cannot go thru at this time, the Americanization bill will be at least one step in preparation for it.

Just now there seems to be some prospect of the passage of the Keating bill, providing for the pensioning and retirement of superannuated government employes, and also for the bill providing $25,000 for the expenses of a Congressional commission to investigate and make recommendations in the direction of classifying positions in the government service, and standardizing salaries for similar grades of service in the various Departments. Both of these measures are badly needed. The fate of all these bills will be known before this is read, however, and prophecy is of no avail anyhow.

THE NATIONAL EDUCATION ASSOCIATION PROGRAM

THE National Education Association has been perfecting a strong organization for the purpose of following up what seems to be a most favorable development of educational interests. Dr. Strayer, president of the Association, was obliged to abandon his trip late in December, on account of the influenza epidemic. Some weeks later he started out again, spending part of January and February in the Dakotas, Kansas, and adjoining states, closing the tour at Chicago at the meeting of the Department of Superin-

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tendence. He sends in glowing reports of the evidence of popular interest in progressive educational legislation.

Secretary Crabtree told me a few days ago that the officers of the Association, and the members of the Commission, feel greatly encouraged. The teachers of the country are evidently uniting on a program of national support and encouragement of education. It is believed that "AMERICANIZE THE NON-ENGLISH-SPEAKING," ABOLISH ILLITERACY," and "EQUALIZE EDUCATIONAL OPPORTUNITY" will become powerful slogans in our national life within a year.

The Association has taken an important forward step in the advancement of this program in the appointment of Hugh S. Magill as field secretary, to have charge of national and state legislative campaigns, and of the movement for the increase of teachers' salaries thruout the country. Mr. Magill has had extended experience in Illinois as principal of the township high school at Princeton, member of the state legislature, and superintendent of public schools in Springfield.

The Association is preparing to make an extensive investigation of the whole question of teachers' salaries, seeking the facts as to recent increases in salaries in comparison with increases in cost of living and retail prices generally, and especially the conditions at different salary levels and for different types of position, and also the facts as to number of dependents, and the possibility of making suitable provision for the future.

NEW ACTIVITIES OF THE BUREAU OF EDUCATION

DURING the past few months the Bureau of Education has been given the means with which to undertake a number of new types of activity, which are of great interest to those who are cognizant of recent tendencies in federal government. The School Garden Army, of which I have written in previous numbers, is a case in point. The acquisition of *National School Service,* the fortnightly journal formerly published by the Committee on Public Information, is another.

SCHOOL BOARD SERVICE SECTION

IN THE December, 1918, number I referred to the establishment in the Bureau of Education of the new School Board Service Section, made possible by a special allotment from the President's national defense fund. This office is now well organized, with a staff of more than twenty persons, and is beginning to show significant results.

Requests for help in finding teachers, principals, and superintendents are coming in increasing numbers, as more and more boards of education learn that this service is available. The Bureau does not attempt to fit the individual candidate to the position. The usual procedure is to go over the lists and select three or four names of persons who meet the requirements of the particular position, and who seem to be the most available, and to leave the final choice to the appointing board or officer. A considerable number of requests for teachers for rural and graded schools are received, tho the great majority are for high school and college teachers.

SEEK TO ENLIST NEW TEACHERS

THE most important service rendered thus far, however, seems to be thru the Bureau's publicity campaign, which seeks to enlist many new workers in the teaching profession. The Bureau has been instrumental in securing the publication of a large number of striking editorials in many of the best city dailies of the coun-

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try, urging the payment of adequate salaries to teachers, and advocating more liberal and progressive policies in dealing with the schools. Innumerable news items have been printed also, and appeals to married women and others not now engaged in teaching to take hold and help out in the present emergency.

As the result of this campaign many individuals who have the necessary qualifications have been induced to go to their local school boards and offer their services as teachers. The influence of this campaign has extended even to Europe. Numbers of our boys in uniform, returning from France, stop in Washington on their way home, and call at the Bureau of Education to say that they have seen a notice of the work of the School Board Service Section in some London or Paris paper, and to ask for assistance in finding teaching positions.

A COMPETENT STAFF

THE director of the Section is James R. Hanna, formerly mayor of Des Moines, Iowa. His service as chairman of the legislative committee which put thru the state legislature the bill providing the commission form of government for Des Moines, in addition to his three terms as mayor, insure a wide acquaintance, and testify to his ability as an organizer. Twenty years' experience on the faculty of Highland Park College gives him an excellent background for understanding school affairs and problems. The assistant director is Dr. George E. Walk, of New York University. With these are associated C. H. Moore, in charge of the catalog system; Miss Jane B. Sherzer, formerly president of the Western College for Women, Oxford, Ohio, in charge of placement work; and Mrs. Roberta Harding, Nashville, Tenn., chief clerk.

The School Board Service Section constitutes a most important addition to the working facilities of the Bureau of Education, and it is to be hoped that Congress will provide sufficient funds in the pending appropriation bill to continue and extend the work.

UNIVERSITY EXTENSION PLAN

A NEW division for the promotion of university extension study and the immediate furtherance of the Americanization work of the state universities has been established, called the Division of Educational Extension. This division, created by special presidential appropriation available until July 1, has also for its purpose the salvaging of the valuable educational data collected during the war, and the inauguration of a more comprehensive educational program along extension lines in the state universities.

CULTURAL VERSUS USEFUL EDUCATION AGAIN

IN A syndicated newspaper article President Nicholas Murray Butler, of Columbia University, has been quoted in an interesting analysis of what appears to him to be two antagonistic conceptions of education.

After outlining what he considers the function of the elementary school, President Butler offers the somewhat dogmatic assertion that "the elementary school is no place for *any form of* vocational or technical instruction." (Italics mine.) It is difficult to understand what an educator can be thinking of when he repeats such a sweeping statement, ruthlessly cutting off more than half of our boys and girls from any possibility of sharing the admitted advantages of a form of education which they can put to the very practical use of making themselves economically independent. President Butler does not need to read this editorial to learn that more than half of our boys and girls do not go beyond the elementary school, and hence will never receive any other than the rudiments of a

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cultural education if the elementary school is to be limited exclusively to this type of work. He goes on to say, as quoted:

More important has been the clash of rival educational philosophies. This has perplexed American parents and teachers and thus for a time has diminished the effectiveness of the school system. The first of these philosophies, and that which I hold to be the sound one, is that which ruled the American educational system, more or less haltingly as to its execution, from our colonial days down to the close of the nineteenth century. This philosophy taught that education is a process of body building, spirit building, and institution building, in which process skillful and well interpreted use is made of the recorded experience of the human race, of the capacity, tastes and ambitions of the individual, and of the problems and circumstances of the world in which that individual at the moment lives.

ARGUMENT BY INDIRECTION

This sound and well tested doctrine has been for some time vigorously challenged by a philosophy which would turn education into a largely mechanical process with a purely gainful end, and which would have in view teaching children merely how to make their living and not how to be worthy to live or how to get the highest satisfaction out of life.

Such treatment of education has found support among those who use the terms "mind" and "spirit" only as symbols for something which they do not understand, but which they believe to be purely material in origin and essence.

Recently the pendulum has begun to swing away from this narrow and barren doctrine and there are signs that sooner or later those teachers and schools that have come under its control will be again set free to educate men and women, and not kept to the task of merely training male and female human animals to make a livelihood.

THESE EDUCATIONAL IDEALS NOT ANTAGONISTIC BUT COMPLEMENTARY

IN THUS reviving a question of divergence between two views of education President Butler seems to imply that the program for vocational education in the United States has proceeded from motives that are purely materialistic. As an analysis of educational theory the statement is interesting, and doubtless has value; so far as any practical bearing on existing conditions is concerned, it contributes nothing at all. President Butler knows, or should know, that there is no responsible body of educators in this country advocating the diversion of the public school system to the "task of merely training male and female human animals to make a livelihood."

The foremost leaders in the vocational education movement are among those who take the sanest and broadest view of education in a democracy. On behalf of vocational education the plea is everywhere and constantly made to include all those elements "necessary to provide a balanced and well-rounded education," having regard to the fact that the individual is not only a wage-earner and breadwinner, but a human being, potentially a parent, a citizen, and a member of a community. President Butler's preferred philosophy would provide much less than this.

What is the motive behind this perennial attempt to throw dust in the eyes of the people on the alleged issue of the "materialistic" tendency of an education that sincerely aims to be completely democratic, and *both* cultural and useful?

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SHOP NOTES AND PROBLEMS

ALBERT F. SIEPERT, *Editor*

TABORET.

THE round taboret here shown is designed for a problem in bench work. In making the rails first prepare a piece 6½" × about 9" × 1⅜". Then from a ½" board cut out thin triangular pieces a little larger than shown and glue into position. When glue is set the mitre can be layed out and the joint surfaces planed across the grain with a shearing cut. The curve can now be marked on the wood and the surplus stock removed with a plane. Finish curve with sandpaper, then gage guide lines for width of rails and rip-saw apart. The squareness of the finished job largely depends on the accuracy with which the holes for the dowels are bored, and a jig may be found necessary. In clamping the rails to the legs a device for holding the bottoms of the legs in proper position will greatly help to keep the work true. The writer has had good success with this problem in the first year of high school. Made of mahogany and well finished it is a very attractive piece of furniture.

—G. M. MORRIS,
Boston, Mass.

INK STAND.

This is a problem which requires accurate and skillful tool manipulation. The covers can best be cut from one piece of stock on which the recesses are laid out and cut before the outside dimensions are secured. This insures strength enough about the recesses to enable the workman to score with chisel and mallet without danger of splitting. When the recesses have been finished and the covers (including one for the inkwell) have been fitted, the lines for the outside surfaces are marked about the recesses and worked to. Small figured quartered oak stained ebony and waxed makes the best finish as ink spots, which show only slightly, can easily be removed from the waxed surface.

—G. M. MORRIS,
Boston, Mass.

A DRESSING TABLE.

This dressing table can be made of mahogany, sweet gum, or be white enameled. It affords a fine problem for high school boys, and the construction is along the same lines as any other piece of furniture. The table is put together with mortise—and—tenon joints, and the mirror frames are mitred at the corners. As the drawing with the notes are self explanatory the only unusual feature in the making of this dressing table is the curved top rim of the two end frames. To make an end frame get out the stock to its full width (3¾") and fit to a mitre. Then shape outline as shown on drawing. To glue the frame together glue triangular pine blocks near each corner and clamp with wood hand screws. After frame is "set", remove pine blocks carefully.

When the mirrors are to be fitted in place on the end frames, first make a cardboard pattern of the curved end. Place this upon the surface of the glass and follow the outline with a good glass cutter. Do not try to break off the surplus glasss all at one time. It is better to run radial cuts with the glass cutter from the outline desired, out to the edge.

The flutings are made with a small ¼" outside ground gouge or carving tool. The effect is very pleasing, and the work is not hard to do. The end frames are hinged to the center mirror frame so each outside mirror can be swung around.

—F. J. BRYANT,
Saco, Maine.

CANDLE-STICKS.

The accompanying drawings of candle-sticks were worked out at the Middletown, Ohio, high school. They proved to be very popular with many of the manual training students. Many of the candle-sticks were turned out after the regular school hours.

—E. F. JUERGENS,
Middletown, Ohio.

The only man who can train men to build ships is the man who knows shipbuilding, but the instructors must be skilled teachers as well as skilled shipbuilders.

—E. E. MacNary.

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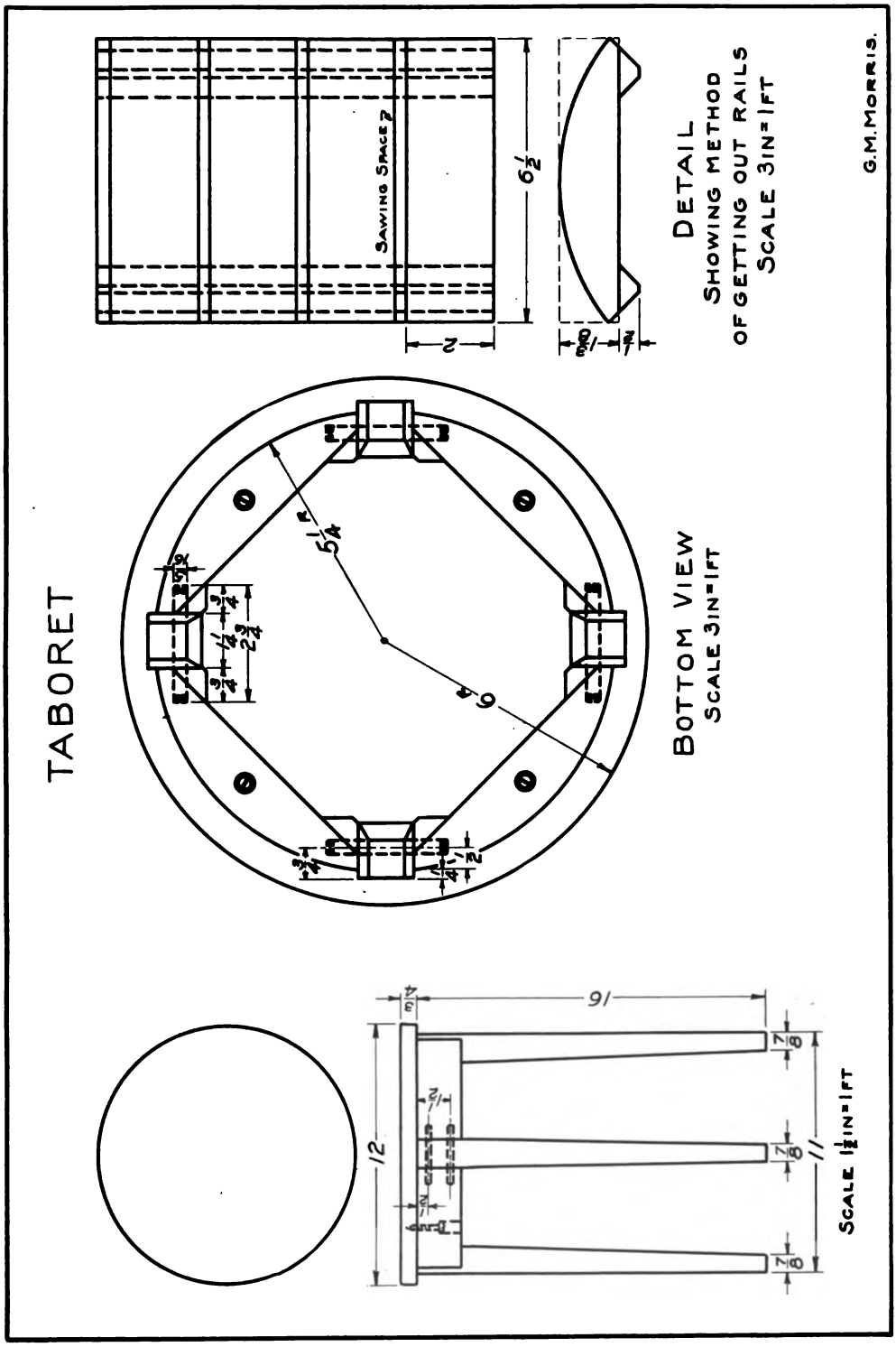

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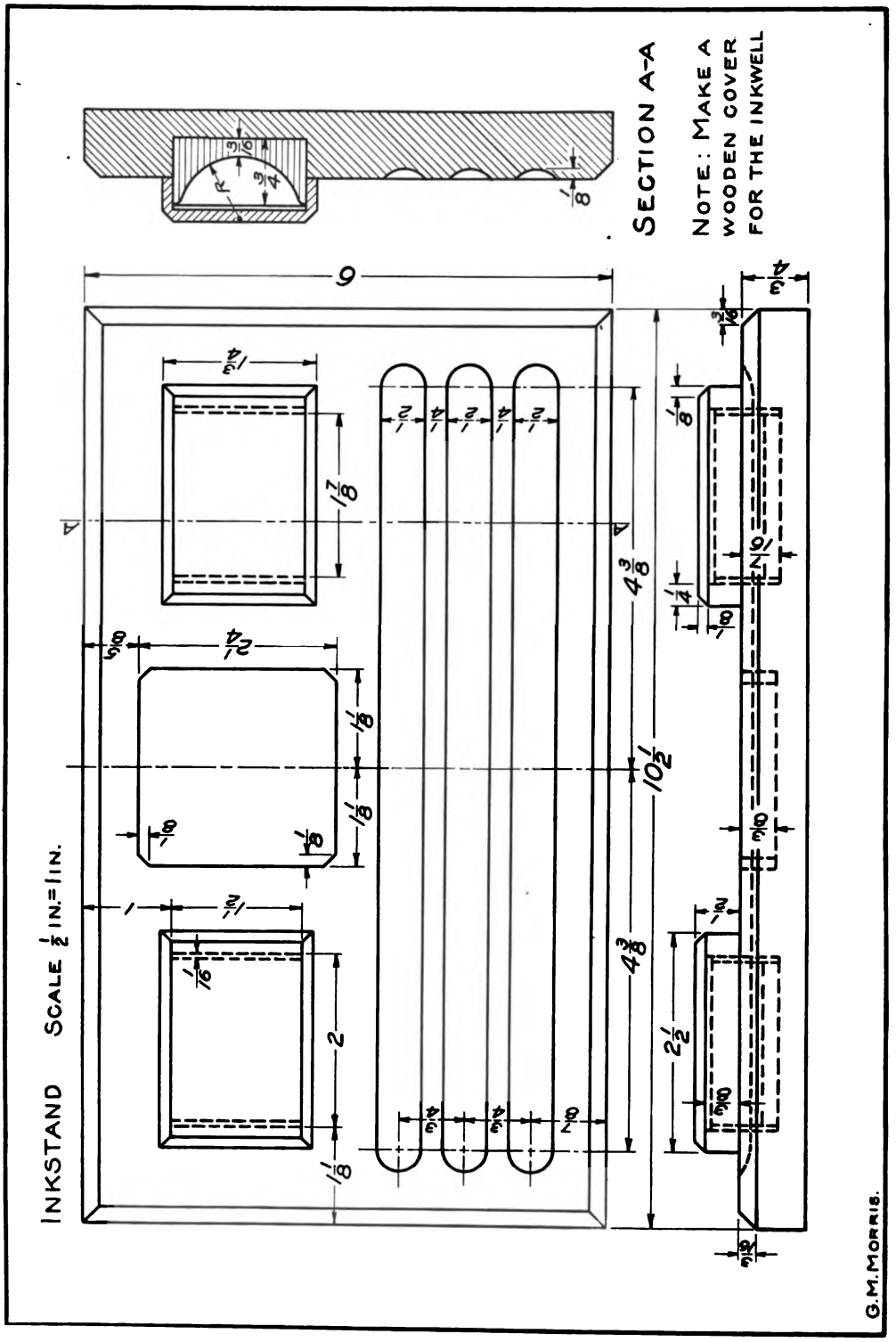

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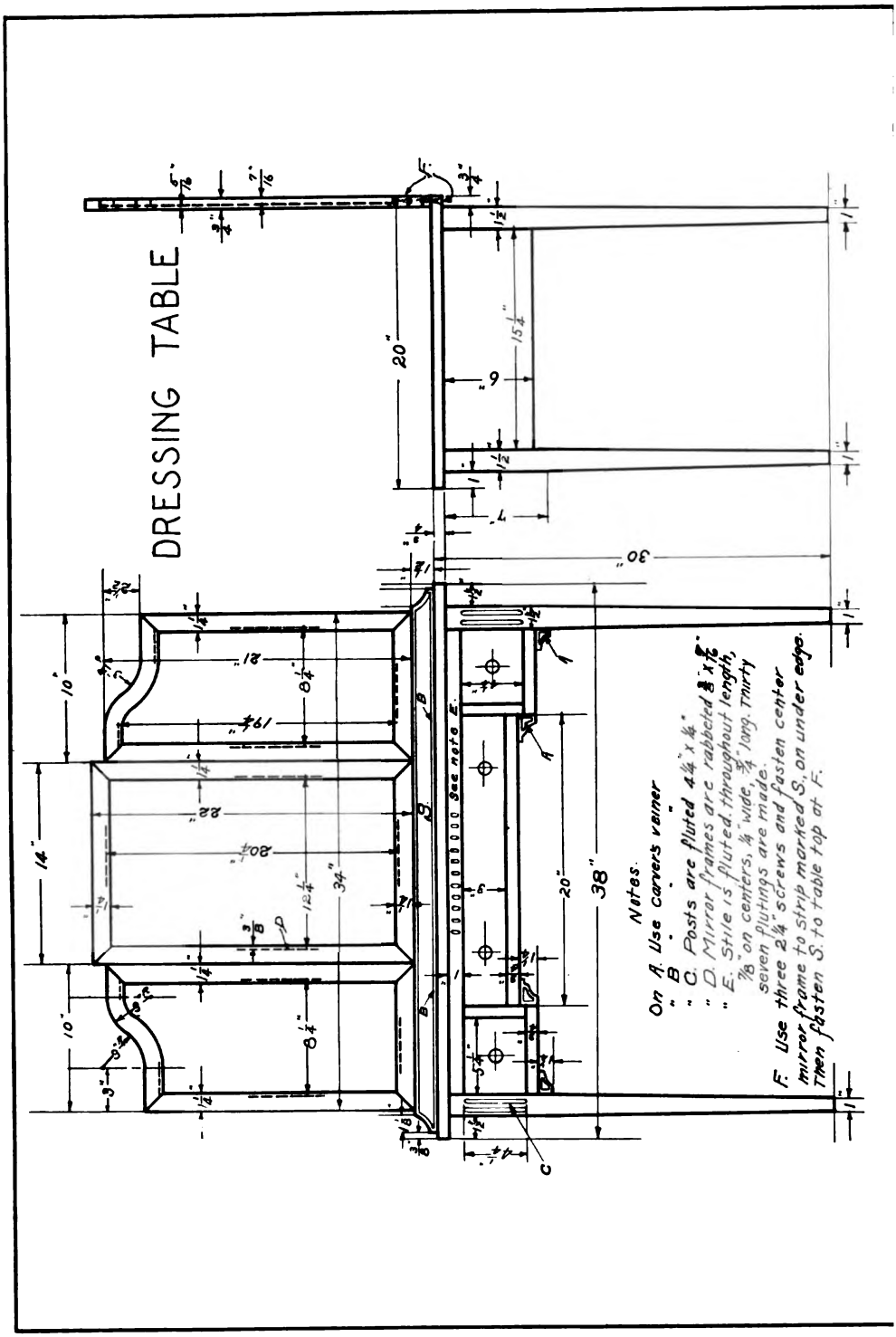
DRESSING TABLE
Notes.
On A, Use carved veiner
" B " "
" C, Posts are fluted 4/4" x 4/4"
" D, Mirror frames are rabbeted 3/8 x 1/2".
" E, Stile is fluted throughout length, 7/8" on centers, 1/4" wide, 3/4" long. Thirty seven flutings are made.
F, Use three 2 1/4" screws and fasten center mirror frame to strip marked S, on under edge. Then fasten S to table top at F.
See note E.
20"
38"
30"
14"
10"
34"
22"
19 1/4"
18"
8 1/4"
6"
15 1/4"
20"

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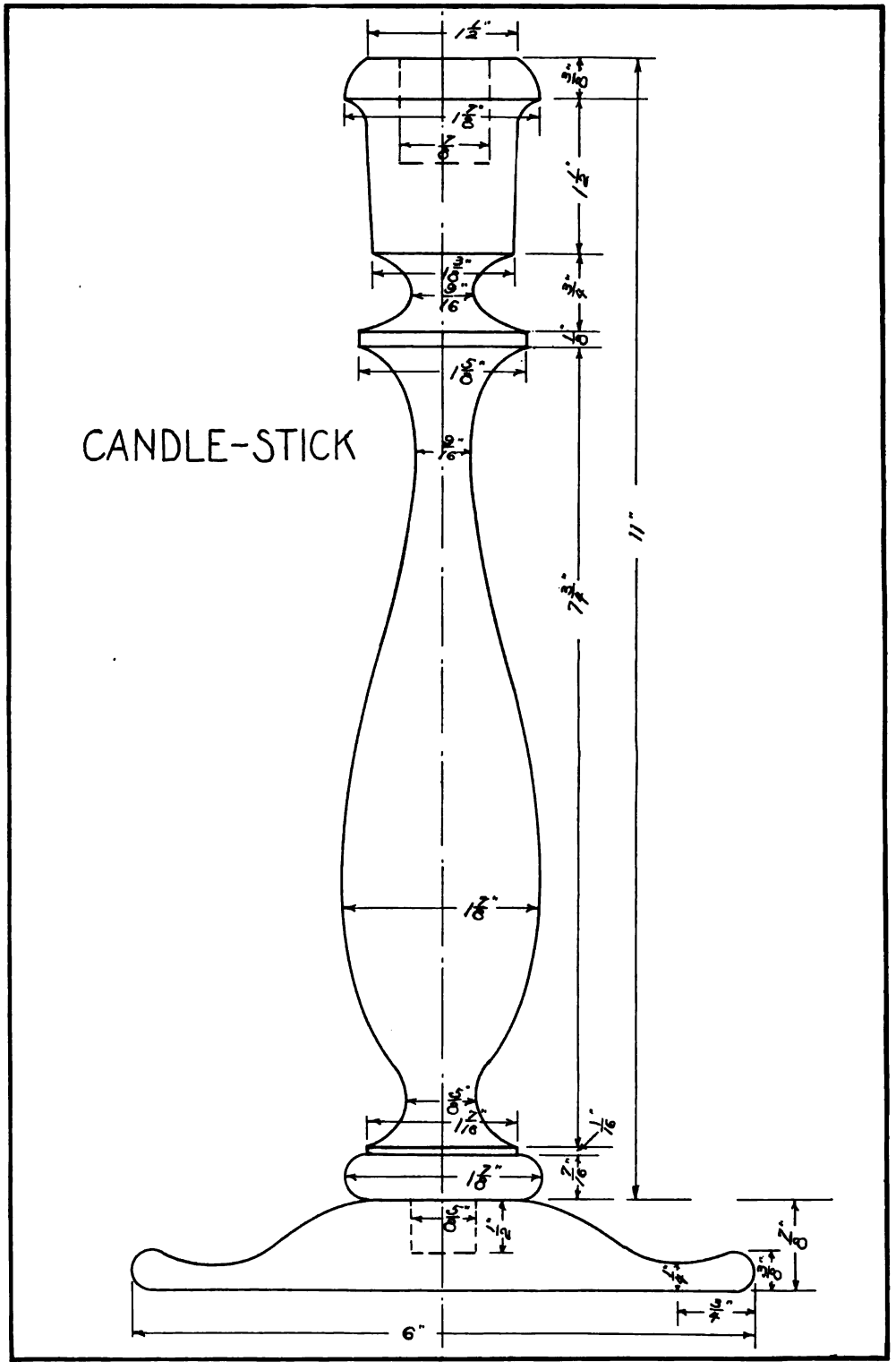

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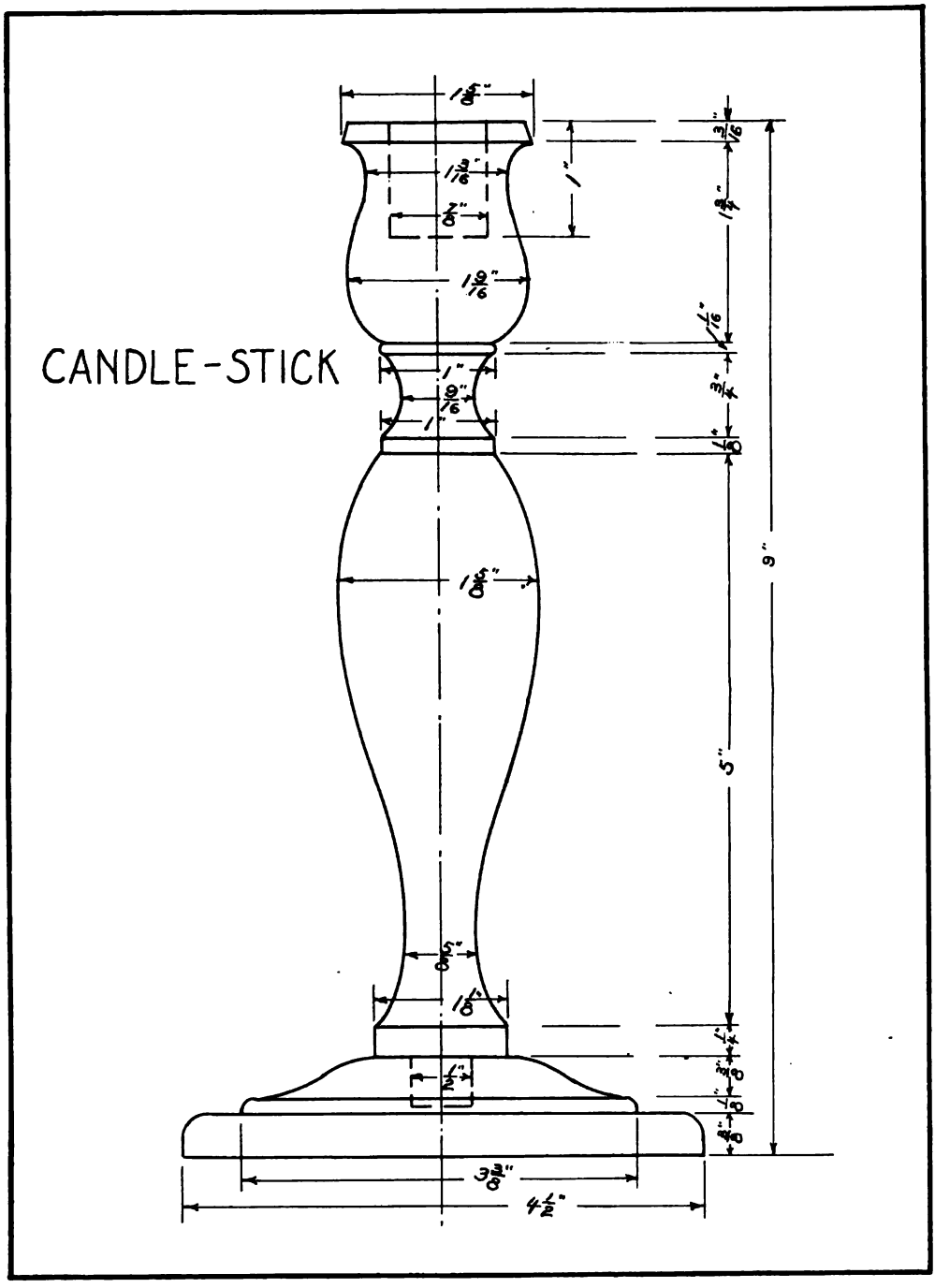

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CURRENT PUBLICATIONS

THE most important volume that has come to our attention during the past month is *Industrial Work,* by Charles R. Richards. This is one part of the report of the survey of the public schools of Gary, Indiana. It is published by the General Education Board, 61 Broadway, New York City. It contains 204 pages, yet the price placed on it is only 25 cents.

This is not the kind of a survey report that deals chiefly with generalities and statistics and uses the art of camouflage in avoiding the real issue. On reading this report one is convinced that the author is stating the case fully, that he tells the truth as he sees it without reference to the individuals involved or the reputation of the schools. Because he has dealt with practical details in this frank, impersonal manner, and because he sees these details in their relation to the large problems of aim, method, and administration, his discussions have a peculiar value.

First he makes it clear in what the Gary system consists. Then he states the aim of the shopwork and its character and distribution thru the schools. In the next three chapters he describes the shops and the tests employed in making the survey. These ought to be extremely interesting to supervisors and shop teachers. A brief chapter is given to "Drawing and Handwork" and another to "Forms and Records." Then follows the valuable chapter which gives the "Summary and Conclusions."

It is impossible in this brief space to adequately summarize this report but a few statements may suggest some of the high spots and lead the reader to *study* the entire volume, not merely read it thru once. The report maintains,

1. That the industrial work at Gary is not primarily or even sufficiently vocational.

2. That the pupils do gain first-hand contact with many real phases of industry yet much of the work is "extremely empirical as to method." "The reasons for direct performances should be brought out" and "manual experiences should be made the opportunity incidentally and naturally for enlarging the intellectual conception of the thing done."

3. "The construction and repair work limited to the up-keep and expansion of the school plant does not offer sufficient material to serve as a permanent and sole basis for shopwork experiences on the time allotment of the Gary Schools."

On the other hand the author believes that from the cultural point of view the shopwork at Gary has been a real contribution to educational practice in the elementary schools.

Trade Foundations Based on Producing Industries. By R. H. Rodgers, J. I. Sowers, L. Day Perry, Charles W. Sylvester and George M. Brace. Published by Guy M. Jones Company, Indianapolis, Indiana. Size, 6¼ x 9¼ in.; 522 pp.; price, $1.25.

It is impossible to give within the space allotted the review which this book deserves, because it is so comprehensive. It is divided into five sections covering occupations, materials, tools, processes and operations, and drawing, written by the five authors, respectively. In addition, twenty-seven directors of shopwork and tradesmen from different parts of the country, have contributed the projects.

The development of industry is traced from prehistoric tendencies to present-day occupational life. For convenience the latter is divided into producing occupations and service occupations, the former being further separated under agriculture, lumbering, fishing, mining, manufacturing and mechanical pursuits. Under each of these sub-divisions come the individual trades or groups of trades. The needed materials with which the tradesmen work are considered under structural materials, preserving and finishing materials, flexible materials, abrasives, etc.

The history and development of a few common tools is traced to show how progress has been made and to bring out reasons for kinds and types. The tools, machines and other equipment necessary for given trades are presented as trade sets or combinations and are illustrated. The processes and operations in producing trades which may be duplicated in the average school shop, are also presented.

The history of drawing, its development, and general uses are taken up. The trade uses of different kinds of drawing are explained and illustrated so as to make clear to the student that drawing is really a language.

Part I of the section on projects introduces certain examples which bring out the uses of the most common tools. Part II is made up of prevocational projects which are classed under two divisions, those which simply indicate certain trades or industries and those which represent units of work in trades and industries.

The book is intended as a textbook for seventh, eighth and ninth grades.

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FIELD NOTES

(*Continued from p. X.*)

While talking with H. W. Kavel, acting director of Dunwoody, as to the future of the Institute, he said that all the regular work of the school is being pushed and extended, and in addition two new courses have been added, one in farm mechanics and the other in commercial photography.

The short unit courses, outlined under the heading of farm mechanics include carpentry, concrete construction, blacksmithing, oxy-acetylene welding, machine shop practice, automobile operation and repair, gasoline tractor operation and repair, ignition, electric wiring, farm lighting, storage batteries, and care and operation of electric motors. This course will be arranged in short units varying from one to three months in length. A student may elect to take one or more of these units at a time, and during a period of from two to four years may complete them all, depending upon his previous training and experience, and the length of time he can devote each year. All of the work in this course will be applied to problems on the farm, and will be open to applicants over eighteen years of age without tuition if residents of the State.

The course in commercial photography covers the following: Making negatives, developing negatives, use of camera in making copies, use of camera in enlargements, printing from negatives, developing by Norton process, drying prints, and methods of printing on photos with printers' ink. This course offers an opportunity for handicapped men to qualify for good positions. The time necessary to cover the work will vary from six to twelve months, depending upon a man's previous training and experience.

—J. L. PEMBERTON.

MEETING OF THE DETROIT MANUAL TRAINING CLUB

E. G. Allen, assistant principal of the Cass Technical High School, was the speaker at a recent meeting of the Detroit Manual Training Club, his subject being "Occupational Descriptions for the Purpose of Specifying Labor." Mr. Allen was called to Washington last spring to take charge of some work in the Bureau of Statistics of the Department of Labor, and since that time he has been dividing his time between

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FIELD NOTES

(*Continued from p. XIV.*)

school and government work. The work at Washington, which he described to the Club, consisted of listing the principal occupations of the country and describing the several jobs connected with each occupation.

The reason for compiling this information was to make possible the intelligent selection of men by employers of labor. War time conditions with the resulting turnover of labor served to accentuate the need of an adequate means of finding the proper man for each job in order to minimize the shifting from one job to another. This shifting, or labor "turnover," amounted to three hundred per cent in one month in one of the eastern shipyards.

One of the difficulties encountered in this undertaking was the lack of uniform trade nomenclature throughout the country, a job being called by one name in one locality and by some other name in another place. Consequently, putting the hiring of labor on a national instead of a local basis necessitated the standarization of terms. As an illustration of the need of this uniformity of nomenclature, Mr. Allen cited the case of a Denver man who was called to Washington to take charge of some engineering work in which he was an expert. However, after selling his home and moving with his family to Washington, it was found that due to an inadequate description of the work and a difference in the meaning of certain terms the position was not at all what the engineer had thought and was one for which he was entirely untrained.

Another difficulty met in this work was the attitude of organized labor toward the matter of describing and defining the different trades. Labor union officials expressed themselves as opposed to any attempt on the part of the Government to interfere with or change the classification of labor as they themselves had defined it. Open antagonism was avoided here, however by announcing the policy to describe *occupations,* not *trades,* thus escaping the long-standing disputes between trades as to the exact lines which separate some of the more closely related trades such as plumbing and pipe fitting.

In the brief period of time at his disposal in addressing the Club, Mr. Allen could not enlarge upon the subject as he would like to have done, but urged the teachers to have their names

(*Continued on p. XVI.*)

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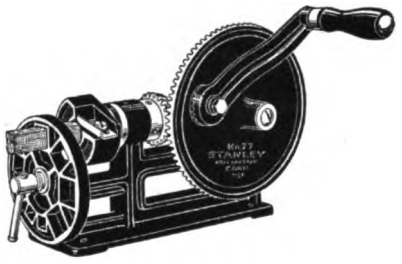

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One cutter head complete for making dowels or rods $\frac{3}{8}$ inch in diameter is furnished with each machine.

Additional cutter heads with cutters $\frac{1}{4}$, $\frac{5}{16}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$ and $\frac{3}{4}$ inches can be furnished at slight extra cost.

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FIELD NOTES

(*Continued from p. XV.*)

put upon the mailing list of the Department of Labor in order that they might receive from time to time the publications of the Department on the classification of labor. A volume covering the metal trades was presented as a sample of the work and copies were distributed to all those present.

—H. R. JENNEY.

WESTERN DRAWING AND MANUAL TRAINING ASSOCIATION

Plans for the program of the 25th annual convention of the Western Drawing and Manual Training Association are well under way. The program committee has announced that the general topic, or slogan, of the convention will be "New Ideals and Reconstruction in Education." A well-organized effort is to be made to translate into permanent improvements in our school system as many as possible of the methods and practices which definitely made good in the educational experiments carried on during the war.

The committee and other officers of the Association are aware also that now is the psychological time to strike for more liberal support of those features of the educational system represented by this organization, because of the great popular interest in education due to its achievements and its contribution toward the winning of the war.

One general session will be devoted to a discussion of "A National Policy on Art in Industry." Another will deal with "Reconstruction in the Fine and Manual Arts in Secondary Schools." The annual dinner will occur on Wednesday evening, May 7th. The convention opens with a Round Table session on Tuesday afternoon, May 6th, and closes with a Round Table Session on Friday afternoon, May 9th.

In addition to the annual dinner, the program provides for five general sessions and five Round Table sessions. The latter include: Fine Arts, Manual Training, Household Arts, Printing, Vocational Education.

Speakers who have already promised to accept assignments include: Miss Emma M. Church, Church School of Art, Chicago; Pres. W. B. Owen, Chicago Normal College; Prof. J. F. Bobbitt, University of Chicago; Professor Robert W. Selvidge, Peabody College for Teachers, Nash-

(*Continued on p. XVII.*)

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FIELD NOTES

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ville, Tenn.; Dr. Charles A. Prosser, director, Federal Board for Vocational Education, Washington, D. C.; Dean Charles A. Bennett, Bradley Polytechnic Institute, Peoria, Ill.

The chairman of the Round Table sections are: Fine Arts, Miss Nama A. Lathe, School of Education, University of Chicago; Household Arts, Miss Emma Conley, director of home economics courses, Extension Division, University of Wisconsin, Madison, Wis.; Manual Training, H. G. Givens, professor of industrial education, University of Arkansas, Fayetteville, Ark.; Printing, Leonard W. Wahlstrom, director of manual training, Francis W. Parker School, Chicago; Vocational Education, H. W. Schmidt, director of industrial education, State Normal School, Oshkosh, Wis.

The members of the program committee, in addition to the president and the vice-president of the Association, are Miss Esther Moran, supervisor of household arts, St. Paul, Minn., and Dr. William T. Bawden, U. S. Bureau of Education, Washington, D. C.

VOCATIONAL EDUCATION ASSOCIATION OF THE MIDDLE WEST

At the meeting of the Vocational Education Association of the Middle West held in Chicago January 16, 17 and 18, the attendance was larger than at any other meeting of the Society. Although many were present who did not enroll as members of the organization, 432 did enroll this year as compared with 350 last year and 283 the year before.

The retiring officers were: President—Albert G. Bauersfeld, supervisor of manual training in the high schools of Chicago; Vice President—J. W. Dietz, Member Advisory Board, War Department, Committee on Education and Special Training, Washington, D. C.; Vice President—Professor R. E. Hieronymus, Community Advisor, University of Illinois; Vice President—Dr. L. D. Harvey, President, Stout Institute, Menomonie, Wis.; Treasurer—Mary D. Bradford, superintendent of schools, Kenosha, Wis.

The newly-elected officers are: President—Charles A. Bennett, Dean of School of Technology, Bradley Polytechnic Institute, Peoria, Ill.; Vice President—William Bachrach, supervisor of commercial work, Chicago high schools; Vice

(*Continued on p. XVIII.*)

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FIELD NOTES

(*Continued from p. XVII.*)

President—Dr. W. W. Charters, Dean, College of Education, University of Illinois; Vice President—Mary D. Bradford, superintendent of schools, Kenosha, Wis.; Secretary, Leonard W. Wahlstrom, Vocational Advisor, Federal Board for Vocational Education, 1600 Westminster Building, Chicago; Treasurer—Clara Smith, Employers' Cooperative School, Chicago.

Directors for three years were elected as follows: Professor D. J. McDonald, University of Cincinnati; Professor George E. Meyers, University of Michigan; John J. Arnold, Vice President, First National Bank, Chicago; Sewall Avery, U. S. Gypsum Co.; Celestine L. Schmidt, Home Economics Dept., University of Wisconsin; Henry G. Greenebaum, Secretary, Eisendrath Glove Co.; Helen N. Hefferan, chairman, educational committee, Women's City Club; A. G. Bauersfeld, supervisor of technical work, Chicago high schools; Mathew Woll, president, International Photo Engravers' Union; Dr. Wm. T. Bawden, Specialist, Department of Education, Washington, D. C.

ILLINOIS MANUAL ARTS ASSOCIATION

Thanks to the good work of Herman J. Barber and his associates in Chicago, the Illinois Manual Arts Association held a "get-together luncheon" at the Congress Hotel in connection with the Vocational Educational Association of the Middle West. On Friday noon, January 17th, the Green Room was full of Illinois men with the Illinois spirit. President Hill of Rock Island presided. After a brief address by Mr. Hill explaining how the war and the influenza had seriously interfered with the work of the Association this year, it was voted to consider the luncheon as the annual meeting for this year, and to continue the same officers for another year.

After the eating was over brief addresses were made by Dr. L. D. Harvey of Stout Institute, Professor D. J. MacDonald, of Cincinnati University, and Dr. Shepardson, president of State Board for Vocational Education in Illinois.

A. F. Rose, president of the Eastern Arts Association, and F. E. Mathewson, chairman of the program committee, are arranging an attractive program for the coming meeting in New York City. In addition to the general sessions, interesting meetings are promised in the following

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FIELD NOTES

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sections: Art, Manual Arts, Household Arts, Industrial Training and School Gardens. The alumni of various institutions are planning reunion meetings.

Ernest W. Watson, of Pratt Institute, Brooklyn, is chairman of the local committee.

The following item from Harvey L. Freeland, head of the manual training department in the East High School, Minneapolis, concerning a recent development in his work will be interesting:

"I have organized in our department at East High School, a course for the "Eliminant" among our boys. To this course we are admitting only those boys who have dropped out of school, or those who, because of economic necessity cannot remain in school for four years. We are attempting to make this course as nearly "vocational" in its character as our time will admit. At the present time we are offering tool smithing and machine shop, 20 hours per week; reading blueprints, 5 hours; applied mathematics, 5 hours; English, 5 hours. After our course has been running a while longer and economic conditions permit, we expect to establish part time and continuation work. In the three months since starting our course it has grown so as to require the full time of three men."

A special twelve-week vocational course in automobile mechanics, similar to the course given to the soldiers in the army vocational detachments, is being given by the College of Engineering of the University of Wisconsin during the second quarter, beginning December 30. A feature of the new course is that it is open not only to regular University students, but also to any person over eighteen years of age who has had a grammar school education. Such persons may enroll as special students to study automobile and motorcycle construction and repairing, auto electric systems, machine shop work, elementary English, and shop mathematics. For the course the University is utilizing instructors and equipment that it had provided for the army auto school.

The manual training departments of the schools in Reno, Nevada, including the high school and grammar schools, have turned out

(*Continued on p. XX.*)

Essentials of Alternating Current Electricity

By W. H. Timbie, Head Department of Applied Science, Wentworth Institute, and H. H. Higbie, Professor of Electrical Engineering, University of Michigan.

Material has only been included in this volume that really represents the essentials the worker on alternating current appliances should know well. The book is written in simple language, and avoids the use of algebra and trigonometry. It is well adapted for use in trade, industrial and high schools where only the minimum time can be allowed and where the maximum amount of information has to be given the student.

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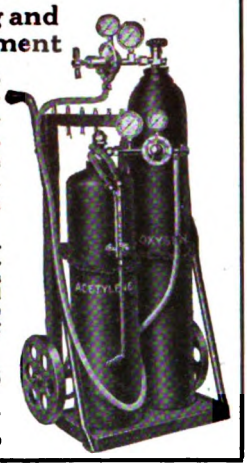

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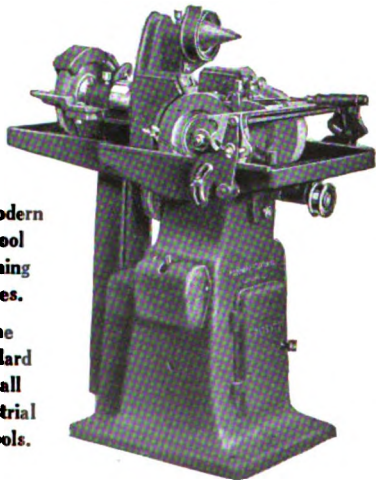

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FIELD NOTES

(*Continued from p. XIX.*)

505 bedside tables for the Red Cross. They completed their quota before Christmas, notwithstanding the handicap under which they worked due to the influenza epidemic. The schools were closed for almost two months, and for two weeks during the vacation it was necessary to call upon the women teachers to volunteer their services for assembling and varnishing. The work was all done factory method and the grade boys even carried home the parts and did the sanding during the vacation. The work was done under the direction of B. M. Hansen and L. S. Neeb, the directors in these departments.

Under the earnest leadership of Dr. E. G. Gowans, state superintendent of public instruction in Utah, the educators and prominent citizens are being urged to get behind the school legislation program calling for an appropriation of $400,000 to be used during the next two years. According to the school attendance record in Utah during 1917-18 more than 50% of boys and girls from fourteen to eighteen years of age were not in school. Dr. Gowans is urging compulsory continuation education.

The long-desired trade school for shoemakers was opened in Lynn, Mass., on February 3. The school is under the direction of Michael J. Tracey, a practical shoemaker of proven ability, who is assisted by five supervisors, four men and one woman. It is equipped to accommodate 40 pupils, 20 of whom may be returned soldiers whose wounds do not preclude rehabilitation thru this trade. Preference has been given to Lynn boys to make up the other 20 pupils. The board of directors is made up largely of men who know the shoe manufacturing business thoroly.

Five societies in New York City united to hold a meeting at the Metropolitan Museum of Art on the evening of February 11th. These societies were the Municipal Art Society of New York City, the Art Alliance of America, the Art in Trades Club, the School Art League and the High Schools' Art Department. The subject under discussion was "National Needs and Opportunities in the Industrial Arts." Among the speakers were Richard F. Bach, of the Museum,

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FIELD NOTES

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M. D. C. Crawford, editor of Women's Wear, Miss Florence N. Levy, secretary of American Federation of Arts, and Frank Alvah Parsons.

The Art Alliance of Chicago is planning a big industrial arts exposition to be held in Chicago in the month of May. The Alliance will have the cooperation of the Illinois Manufacturers' Association. All the industries in which art has a part will be represented, and manufacturers and artists from all over the Middle West will display their work. Announcement has been made that a convention will be held in connection with the exposition and addresses will be made each day on subjects related to the exhibits. Another feature of the exposition will be a demonstration of what constitutes good and bad taste in house furnishing.

The growing popularity of printing is attested more and more. A two year vocational course in printing was started at the Central High School, St. Louis, on January 27th. The course is open to graduates of the eighth grade of the public elementary schools, and includes a study of English, the history of printing and a general laboratory course in printing. The training will be accepted by employing printers as equivalent to two years of apprentice work, and those satisfactorily completing the course will receive the regular third year salary of apprentices when employed. The course has been approved by the Ben Franklin Club of St. Louis and by the journeymen printers represented by St. Louis Typographical Union No. 8.

In the Stuyvesant Evening Trade School, New York, the second term of printing-trade classes was opened the middle of January, and covers typography, proofreading, cost-estimating, and English. The work offered is intended to meet the needs of men and women engaged in printing, publishing, advertising and editorial lines.

The program for the annual Short Course in Highway Engineering at the University of Illinois, given February 17-21, was arranged with particular attention to the various problems of streets, pavements, roads and bridges, and the laws governing their construction. The subjects

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SAW TABLES
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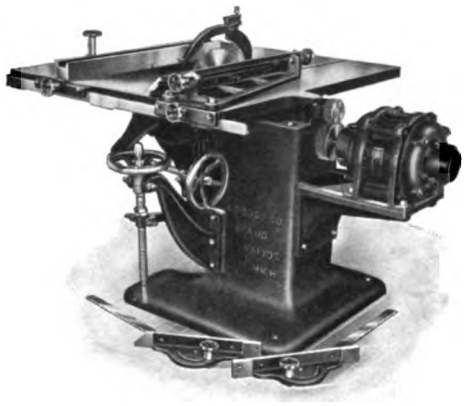

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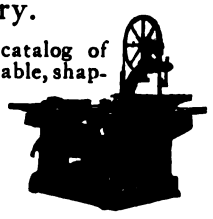

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FIELD NOTES

(*Continued from p. XXI.*)

for discussion were: Road work under the present conditions, financial and labor problems, the Illinois State road system, National highways, and those problems of peculiar importance always confronting the road builder. During one day group meetings were arranged for the contractor, the drainage engineer, and the city engineer.

After serving his country for over a year, Clyde A. Bowman returns to Teachers College as instructor in industrial arts. Mr. Bowman entered the service as a private in October, 1917, making each grade up to Captain. He was in command of a company of 240 engineers, sappers, and mechanics, but the signing of the armistice forced him to stop at Hoboken when within four hours of leaving for overseas.

E. A. T. Hapgood has recently been appointed director of household arts, industrial arts and vocational education in the day and evening schools of Albany, N. Y. Mr. Hapgood is a graduate of Worcester Polytechnic Institute. He has taught in the Technical High School, Springfield, Mass., and for several years was director of manual arts in East Orange, N. J. In addition he has had experience in the wood and metalworking trades. His work in Albany includes the principalship of both the Boys' and Girls' Vocational Schools.

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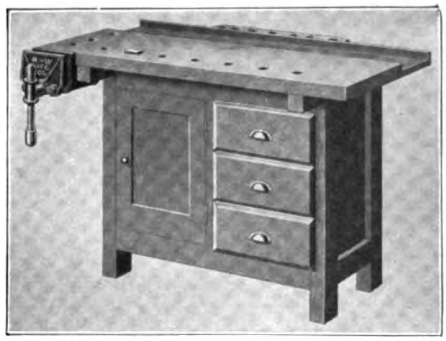

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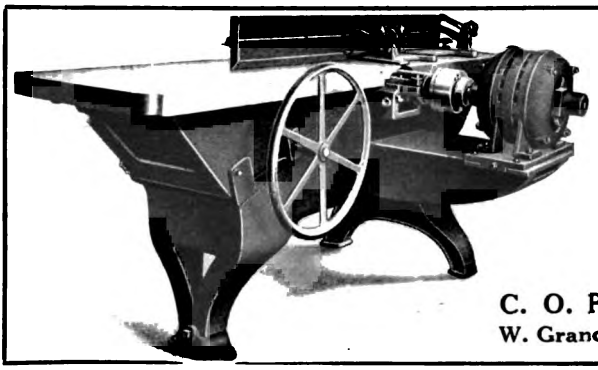

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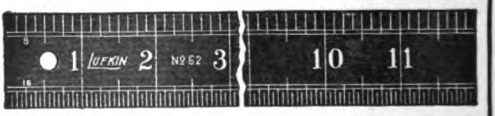

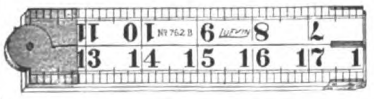

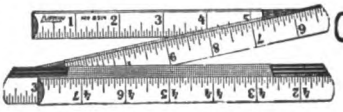

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TRADE NOTES

It is none too soon for shop teachers to begin planning for next year's equipment. There will be an unprecedented demand for shop supplies and equipment of all kinds, and early orders will assure early installation. The signing of the armistice was followed immediately by an increase in school trade, and this will continue to increase as times more nearly reach normal. Send for catalogs and descriptive circulars at once, following it up with your orders. Manufacturers and dealers are urging it.

In these times when the price of machine tools is so high, it sometimes becomes necessary to "select your pattern to fit your cloth." Under these circumstances the purchaser of a shaper will do well to estimate the dimensions of the pieces he is to work and buy as small a machine as will serve his known need instead of buying a larger machine to meet some possible need in the future. To anyone with this point of view the catalog of the Rhodes Manufacturing Co., Hartford, Conn., is a real "find." In this are illustrated and described the Rhodes vertical and horizontal shapers which are said to give the maximum of efficiency at minimum cost. The catalog gives very complete specifications of each of the Rhodes shapers.

The engine lathes manufactured by the Sebastian Lathe Co., Cincinnati, Ohio, are built with a gap bed if desired, without extra cost. The gap is 7¾ in. long and 3½ in. deep, thus increasing the swing of the lathe in gap 7 in. The bed is so braced at the gap that it is just as strong as at any other point. The carriage will run over and connect on opposite side of gap without letting down. A bridge which is easily and quickly placed in position or removed may be fitted in the gap at a small extra charge, but this bridge cannot be fitted after the lathe is finished. Full details will be sent on request.

The 10 and 12 in. engine lathes manufactured by the Monarch Machine Tool Co., Sidney, Ohio, are sure to interest teachers who are planning to purchase new equipment. They are very substantially built and have the best of the modern conveniences. They may be purchased with a variable speed motor drive if desired. In this form the lathe has been found to be adapted to use on the U. S. Destroyers.

(*Continued on p. XXVI.*)

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Brown & Sharpe and L. S. Starrett machinist tools.

Rose tools for copper work and a complete line of tools for Jewelers and Engravers.

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COMMERCIAL EXHIBITS AT RECENT CHICAGO MEETING

The commercial people were well represented at the annual meeting of the Vocational Education Association of the Middle West, held in Chicago, January 16, 17 and 18. The opportunity to meet the instructors of shop work personally is much appreciated. The H. Channon Company, Chicago, represented by R. S. Thompson, were showing their new fireproof bench. The legs are made of cast iron and are adjustable to height; the tool case attached to back of the bench is made of steel and lined with wood, and the steel doors drop down with wood side up. A Chicago high school has just been equipped with 24 of these benches. Mr. Thompson had his small tools arranged to represent a tank, and the effect was quite interesting. This firm carries a full line of heavy machine shop equipment as well as all the necessary small tools, in addition to woodworking machines and tools.

E. A. Cherry, of the Stanley Rule & Level Co., had a very representative exhibit. The attention of all the visitors was attracted especially to the Stanley Doweling and Rod Turning Machine No. 77. With this machine dowels of varying sizes and lengths can be cut to perfect dimensions and of any kind of wood. The price of the machine is $8.50. Note the advertisement on p. XVI of this issue.

Shop teachers who have come to appreciate the value of charts were interested in the blueprint charts exhibited by Simonds Mfg. Co., Fitchburg, Mass. The complete set numbers eleven; eight of them deal with the products which the firm manufactures and include the Hand Saw, Steel, Knife, File, Circular, Band, Cross-cut and Hack Saws. The other three deal with the way they have chartered their work with their employees, and are entitled Corporation School, Welfare, and Efficiency. These latter ones are of interest to supervisors dealing with the question of corporation schools.

In the exhibit of Vaughan & Bushnell Mfg. Co., Chicago, the evolution of a hammer from the bar steel to the finished product was shown. In addition to hammers and braces, they were showing also their square head nail set. The advantage of the square head pattern is that it will not roll. They are cup pointed and beveled, and individually tempered and tested. They can be purchased in special assortments. G. Ruhling and Irving S. Kemp were in charge.

E. C. Atkins & Co., Indianapolis, were represented by their Chicago branch, the exhibit being in charge of C. H. Rowlson and William R. deKnight. Their No. 50 Coping Saw received special attention. The blade is of exceptional high quality, and it has a steel frame and a strong wooden handle. This firm has a large line of saws that are of interest to manual training teachers. In describing their Atkins No. 400 Saw, they say: "It is just as fine as it is possible for mortal man to make a saw." Their Hand-Saw Filer is a simple, accurate tool whereby saws may be uniformly filed. A request will bring complete catalog.

The American Wood Working Machinery Company, Rochester, N. Y., had one of their motor head-block lathes on exhibition. It was attached to power, and hence its special features were easily demonstrated. Fred Oberlander and Walter Hanselman, both of the Chicago office, were in attendance.

G. W. Eckhart and F. F. Ziegler, of Philadelphia, were in charge of Henry Disston & Sons' exhibit, which included samples from their regular line. This firm's goods are well known to the schools owing to their far-sighted business policy in organizing an educational department devoted to the school interests.

H. W. Lederer, representing the South Bend Lathe Works, South Bend, Ind., was present, making acquaintances among the manual training people. It was the first time this firm has been represented at a convention of this kind. J. J. O'Brien, a member of the firm, was one of the first men manufacturing shop equipment who saw in the school trade an opportunity for future commercial trade.

The interest in school print-shops is receiving the attention of type founders. F. K. Phillips of the American Type Founders Company, Jersey City, had an interesting exhibit. A motion

(*Continued on p. XXVII.*)

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TRADE NOTES

(*Continued from p. XXVI.*)

picture machine demonstrated the processes in school print-shops in a very convincing way. The Boys' Vocational School in Newark was shown as an example of well-organized work in printing. A set of eight lessons entitled "Method for Teaching Straight Matter Composition" was distributed. Mr. Phillips will be glad to loan the films to schools.

The full line of "Yankee" metalworking tools, manufactured by North Bros., Philadelphia, was well represented, F. A. Mutchmore in charge. This firm has enjoyed their full share of war business and hence have not been able to add to their school line. However, their push braces, automatic push drills, breast, hand, and bench drills, and their No. 993 Vise, mounted on swivel base for use on bench, are well-known to shop teachers.

The exhibit of the L. S. Starrett Co., Athol, Mass., was in charge of their Chicago branch, of which H. A. Bouchelle was the representative. The special feature of their exhibit was their tool sets Nos. 900 and 901, arranged for students and apprentices.

The Dixon Crucible Co., Jersey City, N. J., was represented by Horace Johnson and B. O. Goldberg. Mr. Johnson has long been associated with the school field and has seen to it that teachers become familiar with the "Eldorado" pencil best suited to their needs. A small booklet which he distributed entitled "Pencil Geography," is a little storehouse of information concerning the manufacture of lead pencils.

Those who had not seen the two books recently published by the Guy M. Jones Company, Indianapolis, had the opportunity at this meeting. Mr. Jones had on hand copies of "Vocational Printing" by Polk and "Trade Foundations Based on Producing Industries," and everyone was much interested in them. The latter named book is wonderfully comprehensive, and in its preparation twenty-seven men have contributed. Descriptive circulars of each book will be sent on request.

(*Continued on p. XXVIII.*)

Fundamental

Tool Processes in WoodWorking

By A. P. Laughlin

A MODERN TEXTBOOK for Grammar Grade Classes—

Gives all that the boy needs to know in order to do intelligent work with the usual woodworkers tools.

Greatly enriches the thot content by suggesting references and experimental work.

Provides for the inattentive boy, the slow boy, the boy who has been absent, and also the boy of marked ability.

The arrangement of type and the paragraphing is a feature of special value.

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Grammar Grade Problems in Mechanical Drawing

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MORGAN MANUAL TRAINING MATERIALS—A perfect system of dry kiln enables us to give you lumber that is thoroughly dry. Our facilities for carrying in stock large quantities of different woods permit us to fill your orders with the best selections. We can also supply you in all woods built-up panels polished two sides. Write us for further particulars and prices. Morgan Company, Oshkosh, Wis.

SODERING TOOLS—Gas and Gas and Air. New designs that lend themselves to greater speed of operation and much higher degree of precision in work, coupled with greater ease of operation and a marked economy in gas. We will make special rates to schools on student equipment for both bench and portable work. Descriptive circulars. L. B. Allen Co., Inc., 4584 No. Lincoln Street, Chicago, Illinois.

FOR PHOTOGRAPHS of furniture with sizes, or full sized working drawings of furniture, write to W. E. Rodick, Bar Harbor, Me.

"HARD-TO-GET" MATERIALS—Every instructor needs our supplies. Nifty pulls and catches, costumer hooks, tray mouldings and handles, copper chest trimmings, wood lamp shades, art glass, tea wagon wheels, sliding casters, dowels, leather and imitations, all kinds of upholstering materials, etc., etc. We make any style cushion to fit your chair or davenport. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

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CUSHIONS—You know your cushions will be made right when furnished by the Grand Rapids Cushion Company. Write for estimates on cushions and all kinds of upholstery supplies. Grand Rapids Cushion Company, Grand Rapids, Michigan.

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ALPHABET FOR LETTERING—In the grades that grade pupils can make and high school pupils need not unlearn. Twenty-page booklet, 25 cents. Milton Clauser, Estes Park, Colorado.

HAND LOOMS—For use in hospitals, schools and homes. Send stamp for circular and Rug Folio. Faribault Loom Industries, Faribault, Minnesota.

EVERY TEACHER interested in the greatest present problems affecting the manual arts in education should read "THE MANUAL ARTS" by the editor of this Magazine, Prof. Charles A. Bennett. Price, postpaid, $1.00. The Manual Arts Press, Peoria, Ill.

TRADE NOTES

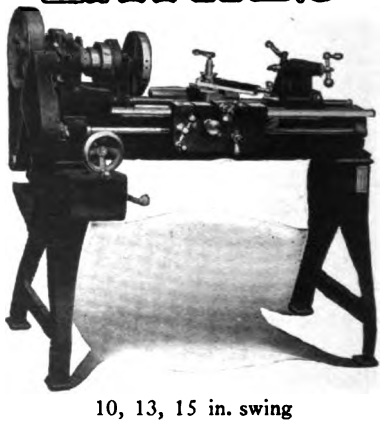
(*Continued from p. XXVII.*)

A firm that is new to many of our readers had an exhibit advertising their abrasive grinding wheels. The Abrasive Company, Philadelphia, manufacture boro-carbone grinding wheels and electrolon grinding wheels. The first named is used for cutting steel and the second for cutting cast iron, brass, etc. This firm manufactures and sells the wheels for many of the special grinding machines made by the various firms in this country. They issue a beautifully-printed and well-illustrated catalog. C. W. Blakeslee and F. B. Miller, of the Chicago office, were in charge.

The exhibit of Frederick Post Co., Chicago, was in charge of J. J. Blattau and H. A. Stevens. This firm either manufactures or imports practically everything needed in the drafting room, a fact which was well brought out by their exhibit. In addition, they invite plans and specifications for special equipment.

The Oliver Machinery Co., Grand Rapids, Mich., announce that Walter F. Reading has been appointed district manager in charge of their St. Louis office, succeeding T. J. Piers, who is no longer connected with the firm.

SEBASTIAN LATHES



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The call for **Manual Training Men** is unusual and we hope for a response to this call to service. The great North West pays the best salaries.
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TEACHERS' INTRODUCTION to Demonstrations in Woodwork.

It contains valuable information for teachers, superintendents and directors. It presents a practical plan for the teaching of the fundamentals of woodworking, especially suited to rural schools, consolidated schools and in schools where instruction by a teacher is necessarily limited. It tells about equipment, lumber, hardware and supplies, payment for material, etc.

It tells how to use "Demonstrations in Woodwork" by Van Deusen, a textbook and shop manual in three parts, price per part 25c.

A copy of this TEACHERS' INTRODUCTION will be mailed without cost, on request.

THE MANUAL ARTS PRESS, Peoria, Illinois

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BOOK NOTES

THE American Library Association has done much creditable work for our boys in service. It has selected, organized and supplied libraries with the best literature, including useful and educational books.

During the month of January this Association placed three large orders, in addition to numerous small orders, for Griffith's "Carpentry." These books were distributed to various camp libraries, but were mainly sent across the water for use in France.

The adoption of "Carpentry" by the American Library Association is a marked tribute to its practical and authoritative nature. In addition to this book, the American Library Association has purchased for rehabilitation work as well as for use in camp libraries numerous other titles published by The Manual Arts Press.

"Sewing,—Handicraft for Girls," is the new title of the new edition of "Handicraft for Girls," by Miss Idabelle McGlauflin. The author has thoroughly revised and brought up to date this practical teachers' manual. The book outlines a successful course in sewing running through five years. Hence the change in the title, which is more descriptive of the contents. This book is a valuable handbook for any teacher of sewing. The new edition sells for $1.35 and is published by The Manual Arts Press.

New projects and especially those appealing to boy nature, are always welcomed by the progressive shop teacher. No more valuable contribution to this field has been made than the recently published collection found in "Boy Activity Projects," by Samuel A. Blackburn. This book has already found its place in teachers' libraries and has received many favorable reviews, among which we quote the following from The Southern Workman:

"This textbook will commend itself to progressive teachers of woodwork on account of its practical as well as its educational value. It is a manual having its subject headed in the right direction and shows that the author sees, as all thoughtful educators have seen for many years, that the manual training in our schools must deal with real things and not so much with non-essentials, despite their so-called cultural value. In other words, it must do its part in preparing our youth for real life. This book is full of projects of this character, having both educational and practical value and an absorbing interest for boys in the upper grammar grades, where most of them will end their schooling.

We commend this new work of the author because it is in line with the thought that school playgrounds should be amply supplied with apparatus all of which should be made by the manual training students. This new book is a definite step in the right direction."

—JOHN H. JINKS.

It will be recalled that Mr. Blackburn brought out "Problems in Farm Woodwork" several years ago. Both books show in high degree, originality, human interest, and practical design. The books are companion volumes and are published by The Manual Arts Press.

The "Teacher's Introduction to Demonstrations in Woodwork" contains considerable information helpful in introducing manual training in rural and consolidated schools and in grade schools, especially where a trained teacher is not available. In the "Introduction" the author, Professor Clinton S. VanDeusen of the Normal School in Kent, Ohio, tells about equipment, the simplest possible, about lumber, hardware, and other materials needed, together with special instruction to the teacher. This "Introduction" has been published separately for free distribution, by The Manual Arts Press.

The "Demonstrations" have been revised and are now published in pamphlet form in three parts, eight demonstrations in each part, and sell for 25 cents per part.

Since publication last August, "Mechanical Drawing Problems" has sold through one edition. The demand has exceeded even the expectation of the publishers. The first edition was double the usual size and now the presses are at work printing a second edition twice the size of the first. The call for the book during the last thirty days completely exhausted the supply, necessitating rushing the work.

The authors, Edward Berg and Emil F. Kronquist, of the Washington High School, Milwaukee, Wisconsin, are to be commended for the preparation of this excellent text in a field in which there are already so many good books.

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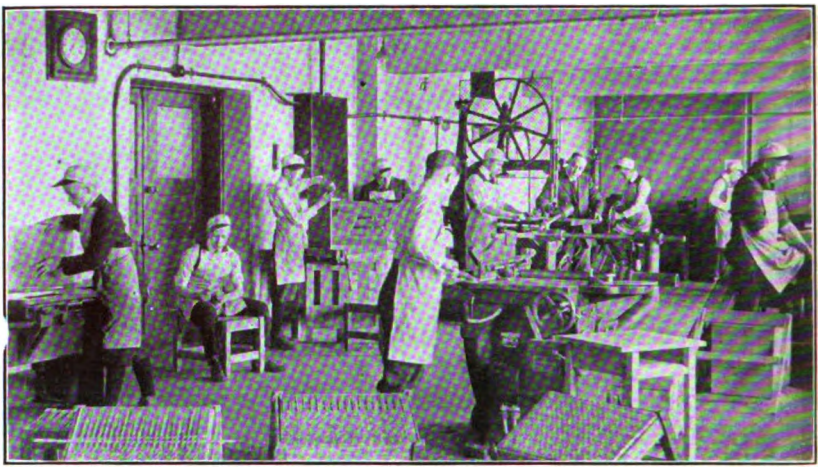

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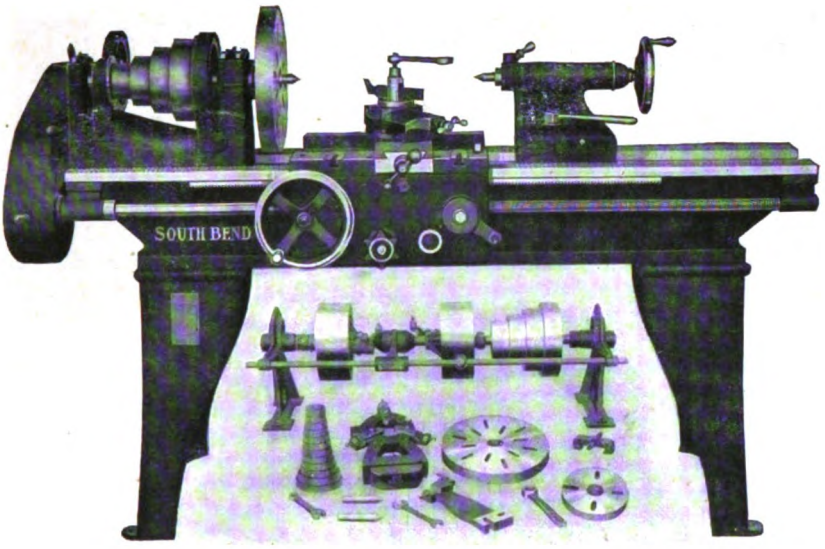

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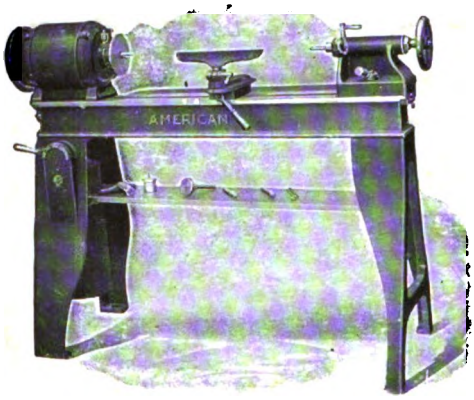

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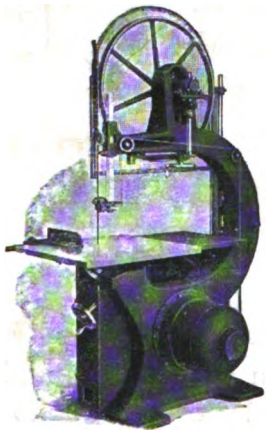

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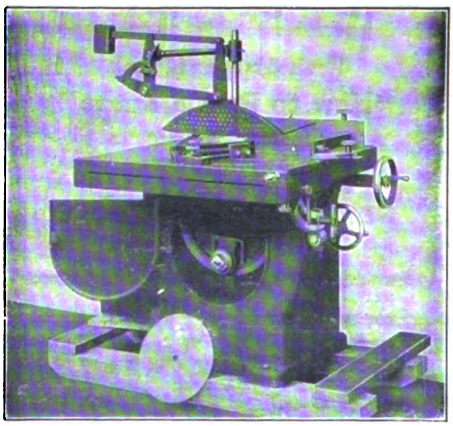

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Vol. XX APRIL, 1919 No. 8

MANUAL TRAINING MAGAZINE

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IT is important that the industrial education which is being fostered and developed should have for its purpose not so much training for efficiency in industry as training for life in an industrial society. A full understanding must be had of those principles and activities that are the foundation of all productive efforts. Children should not only become familiar with tools and materials, but they should also receive a thorough knowledge of the principles of human control, of force and matter underlying our industrial relations and sciences.

—From the Reconstruction Program of the American Federation of Labor

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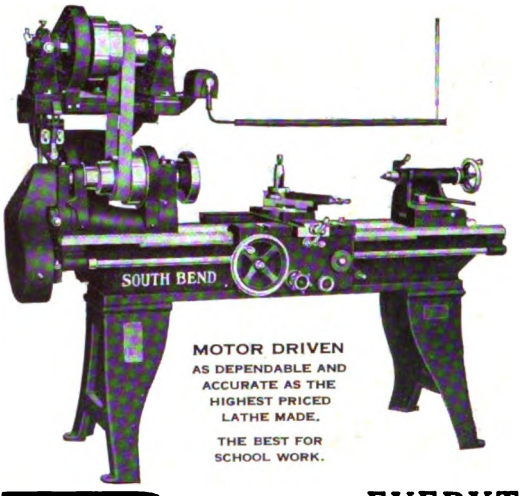

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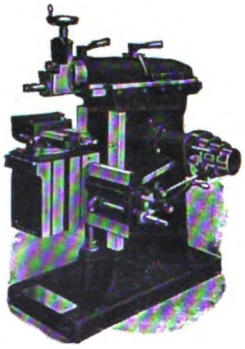

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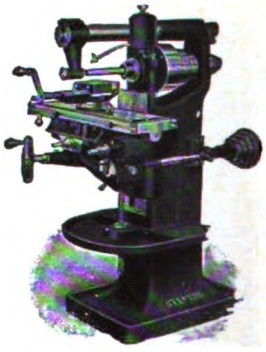

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MANUAL TRAINING MAGAZINE

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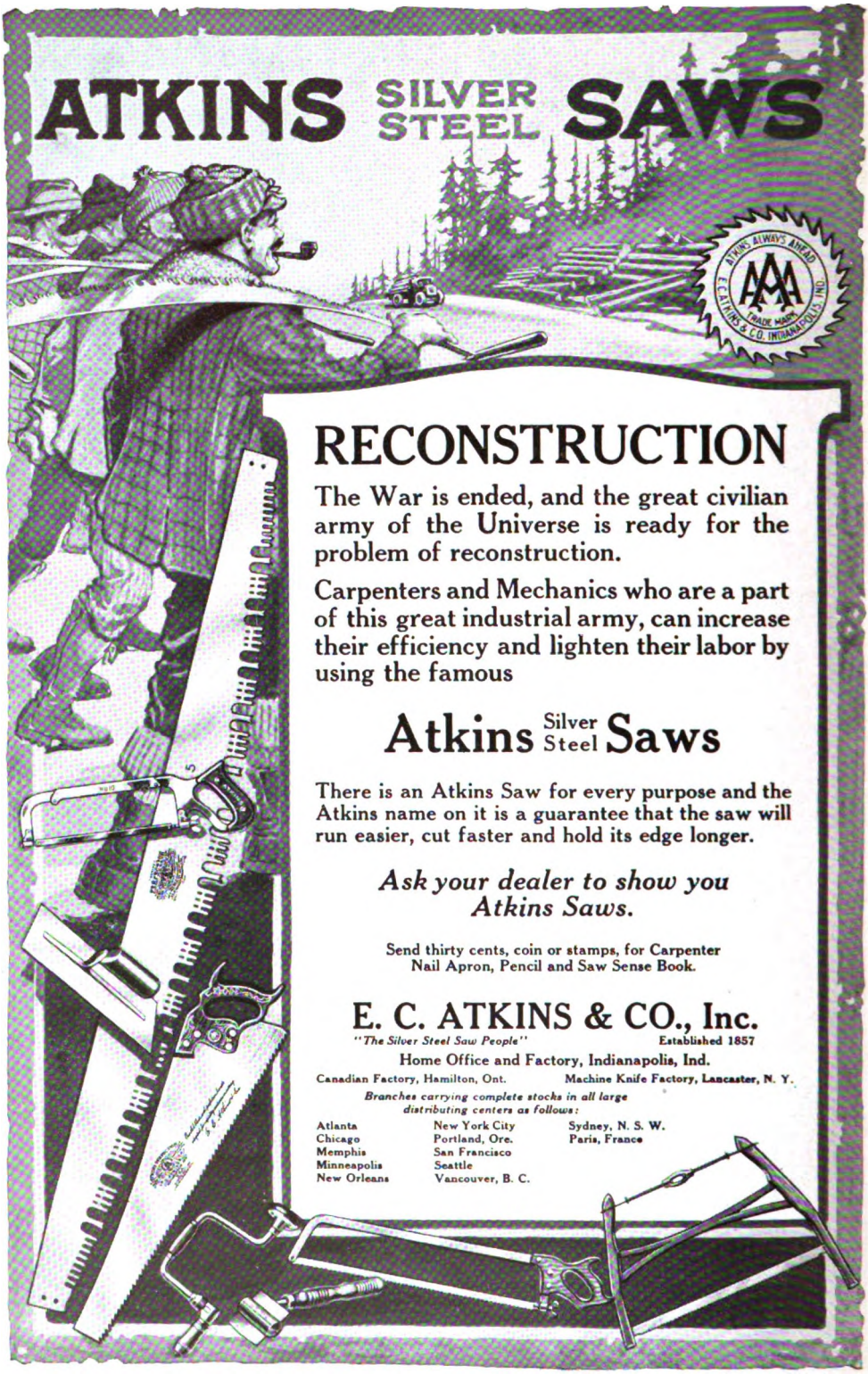

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FIELD NOTES

PROGRESSIVE educational measures are not confined to the extension of vocational education in the public schools. A bill has recently been introduced in the California State Legislature which provides for the establishment of a system of education in the State prisons to be conducted under the direction of the State Board of Education. The innovation calls for a day school in both elementary studies and vocational work for prisoners. The courses are to be graded, with promotions and issuance of diplomas to correspond with the elementary public school system. Prisoners who are qualified shall be appointed teachers by the State Board of Education. The program provides for co-operation with the State Board of Prison Directors, and calls for an appropriation of $25,000 to initiate the work.

Another educational measure which will no doubt become a law, is the bill recently introduced in the New York legislature providing state scholarships for those who have served in the world war and have had the necessary secondary school education. The scholarships would entitle the holder to free tuition and text books in any university or technical school of his choice. The bill also provides that on application of twenty or more honorably discharged soldiers, sailors or marines in any city or school district, a preparatory course for their free use in preparation for university studies may be opened.

AROUND NEW YORK

THE school day for pupils attending the vocational schools of the City of New York was recently shortened one hour by the Board of Education. Hereafter the daily session in these schools will be from 9 A. M. to 4 P. M., the closing time being an hour earlier than formerly. This change was made upon the recommendation of the director of vocational activities, who made a close study of the effect upon students pursuing the work for a period of seven hours from 9 to 5 o'clock. The period from 4 to 5 o'clock, he found entailed a strain upon pupils which made it impossible for them to benefit by any instruction and concluded that much better results would be obtained if the hours for work were limited to six hours a day for eleven months of the year.

The Board of Education are not encouraging shop teachers to take a leave of absence for war or other service as it is difficult to fill their places. An exception was recently made in the case of Robert G. Weyh, a teacher of shop work in P. S. 27, who has been granted a leave of absence with pay, to assist the Division of Rehabilitation of the Federal Board for Vocational Education. He will serve as an advisor to the men discharged from naval and military hospitals of this district. Mr. Weyh has been a teacher in the Bronx for more than twenty years, and has been intimately associated with the organizing staffs of the Division of Rehabilitation in the Washington, D. C., Atlanta, Georgia and New York City offices. He will devote his entire time to this work. Thru the efforts of the principals and teachers of the day and evening elementary and high schools, the division is endeavoring to get in touch with every disabled soldier and sailor residing in Greater New York. In addition to the advisement of these men, the division has organized classes in English and the common branches for foreigners, and is planning courses in vocational and commercial training. This constitutes the gratuitous contribution of the New York City board of education to the Federal Board for Vocational Education.

An exhibition and practical demonstration was recently made by the instructors of their own work in the Studio of the National Society of Craftsmen, 119 East Nineteenth Street. Practical demonstrations were given in modelling, wood gilding, block printing, and toy making. This society is about to start a school which will be known as the School of Craftsmen. One of the aims of the school will be to show the value and necessity of beauty in handwork, and to bring out under instruction individual expression. It is also intended to teach the technical and practical side of each craft in order to open as many doors to the creative ability of the pupil as possible. The industrial art classes are planned to meet the need of practical workers in the arts related to American industries. The instructors are men of wide experience. No previous experience is required for entrance to these classes.

The School Art League of New York City which was founded in 1911 to encourage and develop art talent, has done considerable work in encouraging art among children. During 1916-

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1917 the league reached a total of 36,252 persons. There were sixty-one lectures and meetings for children and other members at the Metropolitan Museum, the Brooklyn Museum and Fine Arts Galleries, etc., with a total attendance of 14,769. The docent or guiding teacher spoke to 226 classrooms before 16,789 elementary pupils and met 102 classes of 4,674 children at the Metropolitan and Brooklyn Museums, reaching in all 21,483 young people. Besides these activities there are scholarships given to talented high school pupils to pursue their industrial courses and medals, and prizes to the number of 489 have been given in the schools.

During the last two years the College of the City of New York has conducted evening courses in textiles. The registration in these courses has increased to over 200. Looms, textile appliances, museum exhibits, dyeing and testing apparatus are being installed. The purpose of these courses is to provide instruction to meet the varied needs of the textile interests in New York City. Since New York City is primarily a distributing rather than a productive center the emphasis is on the needs of this place. However, the productive line is rapidly increasing in the knitting trades, over 200 small knitting mills being located here. Courses are given in general textiles, fabric analysis and designing, and applied textile art. Later courses will be offered in machine fixing and operating. The manufacture of a finished fabric includes a knowledge of the raw material, the processes, the mechanism of the machine, the construction of the fabric and the design. All these steps will be carefully taught to the student.

The New York Vocational Teachers Council of New York City, composed of teachers holding vocational licenses and teaching in the schools, recently set aside a holiday—Lincoln's Day, February 12—for conferences on school problems. The morning was devoted to the following round table conferences at the Manhattan Trade School for Girls' Building:

ELECTRICAL WIRING INSTALLATION AND PRACTICE—*Henry G. Osborne, Chairman.*

"Qualifications a Vocational School Graduate Should Posses to Work as a Helper," by E. J. H. Thiemer, District and State Executive Member, National Electrical Contractor's Association;

"Co-operation Between the Vocational School and the Labor Union," by William R. Parslow, President of Local Union No. 501, International Brotherhood of Electrical Workers.

"The Future of the Vocational School Graduate in the Electrical Trade," by Arthur O. Maves, chairman of Examining Board, Local Union No. 3, International Brotherhood of Electrical Workers.

MACHINE SHOP PRACTICE AND AUTOMOBILE MECHANICS—*John J. Ross, Chairman*

"Employer's Attitude Toward Vocational Training," by Meldin W. Morehouse, superintendent of Mergenthaler Linotype Co.;

"The Union's Attitude Toward Vocational Training," by James J. McEntee, business agent of District No. 15, International Association of Machinists;

"Training and Equipment of Efficient Automobile Mechanics," by W. A. Evans, service manager of Packard Motor Company.

ALLIED PRINTING TRADES—*John E. Mansfield, Chairman.*

"Educating the Pupil for the Printing Trades," by Hugh H. Stewart, director of industrial art, Mount Vernon, N. Y.;

"Facts and Statistics of Our Trade," by Charles Francis, president of The Charles Francis Press, New York;

"The School Trained Apprentice and the Labor Union," by J. D. Rouss, president Local Union No. 6, International Typographical Union.

SHEET METAL, PATTERN DRAFTING AND SHOP WORK.—*John A. Frenzel, Chairman.*

"Attitude of Employers Toward Vocational School Trained Apprentices," by Herman Weinberger, secretary of Employer's Association of Roofers and Sheet Metal Workers;

"Attitude of the Union Toward Vocational Training in Public Schools," by Richard Pattison, president of Sheet Metal Workers Local Union No. 28, I. A.

"Courses of Study in Sheet Metal Drafting," by Warren P. Doing, Bushwick Evening Trade School.

PLUMBING AND PIPE FITTING—*Arnold P. Avery, Chairman*

"Employing Vocational School Boys as Apprentices," by John J. Delehanty, representing the Master Plumbers Association of New York;

"Public Vocational School Training of Apprentices and the Union," by Fred Deghan, secretary of United Association of Plumbers, Local Union No. 463.

CARPENTRY, JOINERY AND PATTERN MAKING—*William C. Rushforth, Chairman.*

"The Attitude Labor Unions are Taking Toward Vocational Training in Public Schools," by John J. Mulholland, member of New York City Advisory Board on Industrial Education;

"Safety First Factors in Teaching Machine Woodworking in Vocational School," by William E. Johnson, Vocational School for Boys, New York City.

TRADE AND MECHANICAL DRAWING—*Albert J. Shoemaker, Chairman.*

"Systematic Planning of Course of Study in Drawing," by C. P. A. Peterson, P. S. No. 5, Brooklyn, N. Y.;

"The Administration of an Evening School," by Charles B. Howe, principal of Bushwick Evening Trade School;

"Correlation of Drawing with Shopwork," by Harold E. Taylor, P. S. No. 5, Brooklyn, New York;

"Some Suggestions in Regard to Drawing Room Equipment," by I. S. Abrahams, P. S. No. 62, Manhattan.

(*Continued on p. VIII.*)

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The Finish Is Important!

SURELY this is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

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FIELD NOTES—(*Continued from p. VI.*)

APPLIED SCIENCE—*William Richardson, Chairman*

"Correlation of Science Teaching with Shop Teaching," by William H. Dooley, director of Apprentice School, Brooklyn Navy Yard;
"Shop Science," by John A. McCarthy, principal of Singer Corporation Evening School, Elizabeth, New Jersey;
"Isolated Facts vs. Systematic Course," by William Richardson, Vocational School for Boys, Manhattan.

ALLIED GIRLS WORK—GARMENT DESIGN, POWER MACHINE OPERATING, DRESSMAKING, MILLINERY, NOVELTY WORK, ETC.—*Sarah V. Clark, Chairman.*

"Problems in Vocational Training of Girls for Industry," by William F. Kurz, principal of P. S. No. 158, Brooklyn, New York; Miss Obermeyer, head of Department, P. S. No. 62 Manhattan; Mrs. Anna Hedges Talbot.

The conferences were well attended and were in general charge of Isaiah S. Abrahams, chairman of executive committee on arrangements; John P. Murtha, chairman of executive committee on boy's work; and Frances Martinez, chairman of executive committee on girls' work. The afternoon was devoted to a luncheon at which the extension and improvement of vocational schooling were discussed. George Loewy, director of vocational activities in the public schools, told of the changes that are being effected in vocational education and some of the plans for extension. He spoke briefly of his new undertaking—educational salvage—trying to save some of the tax payers' money sunk in the Gary experiment. He stated that the "Gary features" were being taken out of the elementary schools and that not one of the four Gary schools in which work was in progress was suitable for a prevocational school.

The Board of Superintendents, he announced, had by resolutions fixed a clean-cut distinction between manual training and prevocational education in the elementary schools. It was the intention to have the district superintendents call conferences of their teachers to acquaint them with the purposes of vocational training and the kind of pupils that can profit more from attendance upon prevocational and vocational courses. In an attempt to provide an adequate supply of teachers, it was planned to organize an evening training school, and he hoped that when a teacher had been certified as qualified the examiners would accept such certificate as the equivalent of some part at least of its examination. Another pending proposal was the opening of a special vocational school for pupils of low mentality. He also touched briefly upon the work now being done under the Smith-Sears Act in teaching discharged soldiers and added that instruction in elementary studies might be included. The following principals spoke on the purpose of the schools they were in charge of: Charles Harper, principal of the Murray Hill Vocational School; Principal Louis, of P. S. No. 162; William King, of P. S. No. 158; and Robert Brodie, P. S. No. 62.

Peter Brady, chairman of the education committee of the State Federation of Labor pictured the remarkable opportunities confronting the vocational teacher and condemned any proposal to use the regular vocational schools for pupils not mentally up to the mark.

The New York Vocational Teachers Council was originated in December 1914 by the present superintendent, Dr. William L. Ettinger, who as associate superintendent opened the prevocational schools. He believed teachers should meet together and discuss their problems. Eventually the council developed into a teachers' organization and later became a union—Local No. 24.

—W. H. DOOLEY.

NEWS FROM THE NORTHWEST

VOCATIONAL education in Washington is progressing rapidly. Many cities have had their courses approved by the state vocational board, and Vocational Director C. R. Frasier is making a special effort to train enough teachers to supply the demand. Edward H. Crussell has charge of the teacher training work in Spokane, Seattle, Tacoma and Everett. Mr. Crussell has his headquarters at the University of Washington and makes weekly and semi-weekly trips to the other cities. The class in Spokane, which numbers sixteen, meets for a four-hour session each Saturday. This city has organized two classes in automobile repair, one in printing and one in cabinet making at the North Central High School, and one automobile course in the Lewis and Clark High School.

George Henry Jensen, director of teacher training, is giving an itinerant course in Smith-Hughes work in Tacoma, Spokane, Seattle, Sno-

(*Continued on p. X.*)

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They can do good work and make satisfactory progress, only if they have the right tools.

KEEN KUTTER tools are always correct in design and efficient in performance. They are made by skilled tool makers to meet the requirements of the best professional builders. If used for your classes they will make your pupils' work easier and lighten your work, too.

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FIELD NOTES—(*Continued from p. VIII.*)

homish, Everett, Bellingham and Ellensburg. This course is planned as an informational course and is given in connection with the extension department of the university. The classes meet once each month for ten months in a two-hour session. Two units of credit are allowed by the university to those who take this course. The great need for this work is illustrated in the fact that when Mr. Jensen, talking before ten thousand soldiers at Camp Lewis, called for a show of hands of all who were familiar with the vocational act, of this number of men from all walks of life only one knew the provisions of the act.

There are two important bills before the present state legislature dealing with vocational education. One would permit school districts to levy an additional tax of one mill for vocational education and the other part-time education of all children between the ages of 14 and 18 years for four hours weekly.

The Inland Empire Teachers Association will meet in Spokane, April 2, 3 and 4. Mr. Jensen has charge of the program for vocational education and C. B. Gwinn, head of the industrial department of the Cheny normal, has charge of the manual training program.

—E. G. ANDERSON.

MEETING OF THE DETROIT MANUAL TRAINING CLUB

James B. Culver, general manager of the Detroit Employers' Association, gave an interesting talk at the February meeting of the Detroit Manual Training Club, his subject being "Some Problems of the Employer and Employee". As a preface to his talk, the speaker outlined the purpose and scope of the organization, which he said were often misunderstood and misrepresented. The aim of the organization, Mr. Culver pointed out, is to carry out a constructive program looking to the mutual benefit of employer and employee rather than a destructive program designed to oppress or dominate those employed.

"The world has never been in a more chaotic condition in regard to the current thought in connection with the relations which should exist between employer and employee." Among the perplexing problems of the day, relative to this complex matter of the relation between the employer and the employee, are the following:

1. To what extent should the Federal Government function with local industries in establishing wage rates? During the war, Government regulation and fixing of wage rates was resorted to in order to relieve industries from unwarranted local demands for higher wages which might have resulted from temporary scarcity of labor in those industries due to war-time conditions.

2. What relation should exist between the employer and the labor unions? Should there be *shop* unions in place of *trade* unions; should the employer deal with the men thru "shop stewards" or "shop committees"? In this connection the speaker asserted that the Employers' Association is not the strike-breaking, union-fighting organization which it is often represented to be but that its members are willing to deal with any local organizations of labor within their own plants, provided these organizations are not dominated and controlled by larger outside organizations unfamiliar with the local situation.

3. What shall be the hours of labor? A change in the attitude toward this question on the part of employers is being noticed in these days. The 60 hour week has been replaced by the 54, 50, and in many cases by the 48 hour week, due to the effort toward conserving the health of the workers.

Mr. Culver stated that the Association is decidedly in favor of the movement now on foot to require all employed boys to attend a continuation school eight hours each week until reaching the age of eighteen. This arrangement, he maintained, would help materially in solving the perplexing problem of where to get more highly trained mechanics for the industries.

—H. R. JENNEY.

MEETING OF OHIO INDUSTRIAL ARTS ASSOCIATION

The fifth annual session of the Ohio Industrial Arts Association was held in Columbus, Ohio, February 7 and 8, with headquarters and meetings at the Deshler Hotel.

The convention opened with a banquet Friday evening with an attendance of one hundred. C. H. Fullerton, superintendent of Columbus public

(*Continued on p. XIV.*)

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ASIDE from its educational and vocational values, one of the advantages of a printing outfit in an educational institution is that it provides facilities for the printing of a school paper. Truly the school paper that is actually printed in the school printing department is a perfect coordination of the educational faculties, "Brains, Heart, and Hands."

The school paper, when it is properly planned, edited and printed, will create school patriotism and an increased interest in all activities of the school, educational, athletic and social. It can be made the bulletin ot all news regarding the school and can be used as a means of interesting parents by acquainting them with the aims and purposes of furnishing instruction that will appeal both to the motor and sensory faculties. The school paper will acquaint parents with the progress being made by the pupils, and it will afford the principal of a school the opportunity to talk logically and convincingly to the parents of the pupils under his charge. The school paper should be to the school what the newspaper is to the community—a purveyor of news, a public forum for the discussion of relevant matters, and a molder of public opinion.

Art, English, composition, punctuation, spelling, mathematics and mechanical skill form the necessary combination for producing a school paper of value. Such a paper, by creating the demand, will have a tendency to promote logical thought and careful assertion on the part of the pupils, will stimulate originality in ideas, execution and art, and unite into a compact, progressive force all the individual departments of the modern school.

A Service Bureau for Superintendents

DURING the last few years there has been an increased demand for information from superintendents of schools, supervisors, principals, and teachers regarding the educational value, economic advantages, and cost and maintenance of school printing equipments. The information furnished by the Education Department of American Type Founders Company in compliance with this demand has been prepared and offered by men of wide experience in industrial education, and in the printing industries, and in designing the wonderful labor-saving inventions that have marked the progress of printing.

Education Department

American Type Founders Company

300 Communipaw Avenue, Jersey City, N. J

This article is set in Century Schoolbook, a new eyesight-saving type designed for educational printing and advertisements. Note its extreme legibility.

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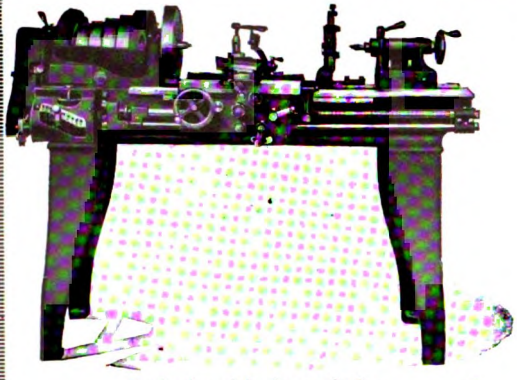
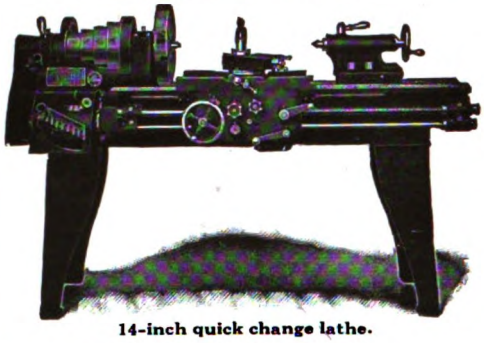


12-inch quick change lathe.



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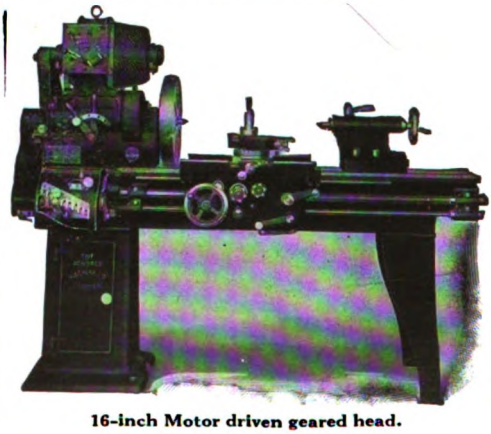

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MONARCH lathes are low in price yet are as accurate as the highest priced lathes. By installing **MONARCH** lathes you can in many instances put in **two MONARCH** lathes for the same cost as **one** of the high priced lathes.

MONARCH lathes are in use in many factories and tool rooms with lathes costing almost twice as much doing just as much and as accurate work.

It is not necessary to pay a high price to secure a good engine lathe.

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THE MONARCH MACHINE TOOL CO.

SIDNEY, OHIO

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VOLUME XX No. 8

MANUAL TRAINING MAGAZINE

APRIL, 1919

LAUNCHING PART-TIME COOPERATIVE EDUCATION ON A LARGE SCALE[1]

FRANK M. LEAVITT
Associate Superintendent of Schools, Pittsburgh, Pennsylvania

IN DISCUSSING the topic assigned, I shall draw my illustrative material largely from our recent experience in Pittsburgh in trying to launch part-time cooperative work on a large scale. I wish to state at the outset that we have not succeeded as yet, and that my lessons will be drawn quite as often from our failures as from our accomplishments. In fact "we count not ourselves to have apprehended," but that we are on the right track we have little doubt. It will conserve time to describe our plan briefly at this place.

THE PITTSBURGH PLAN

Several of the large department stores have entered into a cooperative arrangement with the Carnegie Institute of Technology and the public schools for the study of problems relating to the training of department store employes, to the end that there may be developed a professional spirit thru the whole organization of each store. It is recognized that this will cost money and also that it will benefit greatly the owners of the stores. The owners, therefore, have agreed to contribute jointly the sum of $32,000 a year to finance the work.

It is also recognized that it will take time to develop the plan to a point where it will be regarded as satisfactory. Therefore the owners have agreed to continue the financial support for a period of five years.

The Carnegie Institute of Technology has organized a staff composed of a director, an expert in department store work, an expert in department store education, an expert in salesmanship courses in public and private schools, a principal of a local high school and, at least in an advisory capacity, one or two research experts from the psychological department. The Institute has organized a class of students, mostly college graduates, who have been given scholarships or fellowships of from $500 to $700 each. They are under the instruction and direction of the staff. The staff, the students, and five high school teachers have worked out the details of a first year high school course of study for pupils of the public schools. This course consists of English, arithmetic, general science, color and design, and store organization and practice, and will be given the same amount of high school credit as the regular first year high school work, notwithstanding

[1]An address delivered January 10, 1919, at Chicago, before the annual convention of the Vocational Education Association of the Middle West.

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that every other week the pupils' time will be spent in the stores.

The part played by the school in this cooperative scheme is to furnish such classroom facilities as may be needed within the schools, and to interest in the plan such children as may be benefited by it.

The whole is under the immediate control of what is known as the Research Bureau for Retail Training. The stores, Carnegie Institute, and the schools are represented on this Bureau and also on its Executive Committee. The superintendent of schools is authorized to discontinue the cooperation of the public schools at any time if, in his judgment it is desirable, for any reason, to do so.

It has been voted by the Executive Committee that all children at work in the stores under this plan are *school children* and cannot be discharged by their employers. They may, of course, be suspended pending report to the school authorities. Such, in brief, is the plan.

MAGNITUDE OF THE VOCATIONAL EDUCATION PROBLEM AND LIMITED RESULTS

The late Dr. Andrew S. Draper said, about twelve years ago when commissioner of education for the state of New York, that the problem of industrial education was to train literally millions of workers. We must make two admissions: first, that Dr. Draper's estimate was correct and that the problem of industrial education is a stupendous one, contemplating the training of the rank and file of workers, and second, that, judged from the point of view of numbers, our accomplishment has been insignificant. Nearly ten years after Massachusetts had fired the shot heard thruout the educational and industrial world and had launched its plan for giving state aid to industrial education, there were found in all the state-aided vocational schools in that state, both day and evening, a bare ten thousand individuals. Of these only about three thousand were in day schools.

Let this suffice as an illustration that little, relatively, has been accomplished and that, even at the present time, the whole vocational education movement is marked by acres of printed propaganda, floods of oratory, and a relatively few struggling, poorly supported, and little understood vocational schools and classes. Unless the claims made for industrial education, like those made thirty years ago for manual training, are to fall far short of fulfillment, we must bestir ourselves and must develop plans that will care for *millions,* not merely a few thousands, of the future industrial, agricultural and commercial workers.

POSSIBILITIES IN THE PART-TIME COOPERATIVE PLAN

Is it not possible that the part-time cooperative plan may become an important factor in the solution of this problem?

A word of explanation or definition is necessary at this point. When I refer to "part-time cooperative work" I have in mind a fifty-fifty proposition, not the continuation school plan of salvaging four to eight hours a week from the working time of children between 14 and 16 years of age for educational purposes. I have in mind a modification or adaptation of the plan proposed and partially carried out so many years ago by Dean Schneider of the University of Cincinnati, a genuine half-time work and half-time education plan.

We must not lose sight of the fact that in the past, and to a great extent today, the vast majority of workers have been trained for their work *by* their work and while *on the job.* We shall succeed best when we attempt the least radical, rather than the most radical change from prevailing conditions. One of the most glaring mistakes we have always made in trying

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to introduce industrial education, is that we have insisted on giving it to the wrong people, namely to those who by custom, or ambition, or by opportunity are destined for something better than, or at least different from that for which we propose to train them.

A most significant illustration of this fact is to be drawn from Pittsburgh's experience with the department store plan.

Nearly everybody connected with the schools believed that the education of these prospective part-time pupils was a high school proposition. Just before the close of school in June a meeting of high school principals, elementary school principals, and teachers of the eighth grade was held and the plan was fully explained, and its advantages presented in the most glowing terms. These principals and teachers were requested to canvass the eighth grade graduates and those high school pupils who were likely to leave school in the near future. They were asked to send to the superintendent's office at once the names of all such pupils. About 75 names of elementary school graduates were submitted. Not one high school principal discovered a pupil who was interested in the part-time plan.

At the same time the stores were asked to furnish a list of positions which they would agree to fill with part-time pupils in September. The positions promised aggregated over 1800. One store alone agreed to take 892 half-time employes as follows: First year high school, 84 boys and 134 girls; second year, 46 boys and 116 girls; third year, 112 boys and 132 girls; fourth year, 48 boys and 78 girls; and the balance from the elementary grades. Their request, therefore, was for about 85% high school pupils. The Bureau investigated the educational equipment of the employes of those stores and discovered that of all those under 23 years of age only 23% had ever been in a high school. This, I say, is illustrative of the fact that we have made a mistake generally of attempting to educate the wrong people.

If asked who the right people are, I should answer, unhesitatingly, "The kind of people who are now entering such employment, and these are the "drop-outs" from the upper elementary grades and from the first year high school."

If asked how we are to induce these "drop-outs" to drop out only to the extent of one-half the time, and to continue their education for the other half, I should answer, in the light of our Pittsburgh experience, "Try to get the information to the pupils and their parents *direct,* and not by the way of the teachers."

THE ADVANTAGES OF THE PLAN

Here we had a plan the advantages of which were many and great, particularly for the "drop-outs" to whom reference has been made. The advantages to the part-time student, as we desired to present them to our school children are as follows:

1. He secures a good position since cooperative work is never undertaken by a school system unless the cooperating employer can offer a position which promises future advancement.
2. Not only does the young person secure a good position with promise of future promotion but he receives training for the work which he is doing. A part of this training is given in the place where he is employed and a part of it is given in the public school.
3. Whether at school or at work the young person is under the care and supervision of the public educational authorities.
4. The young person may begin to contribute to his own support while he is still in school securing an education.
5. To many pupils the practical work serves to explain the school work and to make it seem more vital and mort important. In some cases pupils who fail to appreciate the educational opportunities offered by the regular full-time school work become at once faithful and diligent students on entering the part-time class.

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6. This plan tends to hold the young person for a longer time in his first job thus protecting him from that constant change from job to job which is so disastrous to many young people.

7. The plan will start the young worker in the right way by showing him that it is worth while to study the occupation in which he is engaged and that such a study of the opportunities of the vocation will certainly advance him in his life work. Few people are making substantial progress in their daily occupations who are not studying in some way to improve themselves and their work.

It will thus be seen that the part-time cooperative plan of vocational education offers many advantages over full-time work, and even over full-time education, for some young people.

FAILURE TO REACH THE PUPILS THRU THE SCHOOL

These are the advantages of the part-time cooperative plan and I believe them to be genuine advantages, not merely "talking points." But, as noted above, we failed utterly to convince the school teachers of this fact. When the schools opened in September we did not have enough pupils to start even one class. Notwithstanding this fact children were dropping out of all grades above the sixth with great regularity and in large numbers. All those between fourteen and sixteen years of age came, by virtue of our Child Labor and Compulsory Continuation School Law, into contact with the field secretary of the Vocational Guidance Department. There was little evidence that these children had ever heard anything about the part-time plan. What the field secretary has done will be described a little later.

ATTEMPT TO GET INFORMATION TO PARENTS AND CHILDREN DIRECT

Failing to reach the children thru the schools we decided to try to reach them thru modern advertising methods. We wrote up our "material" and took it to one of the cooperating stores with the request that the advertising man be instructed to prepare a little folder that would attract attention and that the folder, when prepared, be printed in quantity and distributed by the department stores with their monthly statements to credit customers. Of course this does not reach all the people whom we would like to reach, but about one hundred thousand such "dodgers" were distributed.

RESULTS OF THE CAMPAIGN

It is too early as yet to estimate what the effect of this method of reaching the parents may be but it is safe to say that it will not "swamp" our part-time classes. A few requests for information have come in and it is probable that we shall have enough pupils to organize one or two high school classes at the beginning of the new semester.

In the mean time the effect of the demonstration has been eminently significant to all concerned. It is showing the department stores that they must make their positions more attractive to young people if they wish to secure high school students. On the other hand it has convinced the high school principals and teachers that there really is a part-time plan on foot. The principals have met to discuss the situation and have studied and approved the course of study worked out by the Bureau.

Furthermore other employing interests in Pittsburgh have become interested in the part-time plan, notably the Bell Telephone Company, the American Locomotive Company, and the employing printers. These organizations are asking the schools to present some similar plan for them.

But the campaign has shown more direct results in the office of the field secretary of the Vocational Guidance Department. Within a period of about two months that office has induced 125 "drop-outs" to take half-time positions instead

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of the full-time work which they intended to take when they left school to get their work certificates. Over 100 of these have "stuck" as we say, a thing that children of that type do not always do easily. Nearly one-half of these are in the Short Course Business High School and the others are in the Junior High School and the Ralston Industrial School.

PERSONAL COUNSEL

The significance of all this, it seems to me, lies in the fact that nothing appears to count largely in this situation except personal counsel and advice given at the psychological moment. Frequently this advice if offered a month before or if given a day later would be without effect. Whether this personal counsel must always be given by the field secretary after the children have slipped the leash of the school remains to be seen. It is possible that the principals may be converted some day to the righteousness (which means "rightness") of the plan, but in any event, that some method will be found ultimately for reaching these neglected or misdirected children who propose to desert the school altogether at an early age, there can be no doubt.

CONCLUSIONS

In conclusion it may be said that the part-time cooperative plan has always appealed to educators as being superior to almost any other plan of vocational education. But the difficulty has been in finding a sufficiently large number of positions to take care of all the young people in need of vocational training.

In the Pittsburgh situation the case is reversed for, while we have eighteen hundred positions in the department stores alone which we are permitted to fill with half-time pupils, there are not enough interested children to fill these positions. Neither have we enough school accommodations to care for so large a number of new pupils. Disconcerting as this situation is, it certainly marks an advance in the right direction.

It should be remembered that, in the Pittsburgh plan, the employers are sharing the expense of the project, as they should in all similar cases because they are to receive direct benefit from it.

Another point which should be recalled as worthy of comment in our conclusions is the liberal and intelligent provisions which are made for working out a course of study. In most experimental work in the educational field this most important piece of work is left to a willing but greatly overworked teacher.

Furthermore, and finally, it should be noted that nearly all plans of vocational education, excepting the part-time plan, and possibly the evening schools, contemplate the training of the non-commissioned officers of the industrial and commercial army. Comparatively few privates have been trained in state-aided vocational schools to date, except in evening schools as above noted. But we can not "win the war" with officers alone. Without meaning any disrespect to the non-coms, or to the captains of industry and their lieutenants, we must not overlook the fact that wars of all kinds are won ultimately by the fighting men—by the privates. We have been told frequently of late that we have a real commercial and industrial war to win yet and we shall need privates here too.

> That no boy or girl shall have less opportunity for education because of the war and that the Nation may be strengthened as it can only be through the right education of all its people.
>
> —*Woodrow Wilson.*

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HOW ROCKFORD, ILLINOIS, IS MEETING THE INDUSTRIAL EDUCATION PROBLEM

U. ROY SEWREY
Continuation School, Rockford, Illinois

Rockford is meeting the industrial education problem in a very effective manner. The boys of all ages and all grades are given an opportunity to better themselves along industrial lines. In our schools we have five different classes of boys, and each class will be treated separately.

PERMIT BOYS

In this class are found all the boys between the ages of 14 and 16 who are forced to work for different reasons. A few years ago these boys were given a work certificate, and the schools lost track of them. We issue them work certificates now, but for only half time. Two boys work at each position, one working in the mornings and the other in the afternoons.

When a boy is working in the morning his working partner is at school. In the afternoon they change about, the boy who was at school in the morning goes to work, and the boy who worked in the morning comes to school. In this way we have one class of boys in the morning and another in the afternoon. These boys attend the continuation school, which is open only to working boys.

From a study of Charts 1 and 2 the course of study of these boys can be readily determined. We sub-divide the morning and afternoon groups into two groups, for two reasons: first, because the classes are too large and second, to separate the boys because of the mathematics they are studying.

Group A are boys who are studying applied arithmetic, and Group B are boys studying applied geometry.

In the shops which are five in number the following subjects are taught: machine-shop practice, pattern making, foundry practice, forging, acetylene welding, and electrical work. The school year is di-

CHART I

PROGRAM FOR PERMIT BOYS

MORNING GROUP

TIME	GROUP B	GROUP A
7:30 to 8:00	Shops	Shops
8:00 to 8:30		
8:30 to 9:00	Mechanical Drawing	A1—Recite Math. A2—St. Room for Math.
9:00 to 9:30		A1—St. Room for Math. A2—Recite Math.
9:30 to 10:00	St. Room for Math.	St. Room for Math.
10:00 to 10:30	B1—Recite Math. B2—St. Room for Math.	Mechanical Drawing
10:30 to 11:00	B1—St. Room for Math. B2—Recite Math.	
11:00 to 11:30	English	English

NOTE—"St." indicates "study."

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vided into eight-week periods, and each boy is required to go to all these shops this year. If this program is still in operation next year, the boys of this year will have a choice of three shops, their time being divided evenly among the three chosen. The new boys will be required to take all of the five.

English is the word used to designate one half-hour period, but civics, vocational guidance and general talks are included.

We issue an eighth grade diploma to all boys attending this school one or two years. A boy entering this school from the 6th grade must attend two years, and one entering from the 7th grade, one year. In this way all the boys can say, "I am a graduate of the grammar school, or equivalent."

CHART II

PROGRAM FOR PERMIT BOYS

AFTERNOON GROUP

TIME	GROUP B	GROUP A
1:00 to 1:30	Mechanical	A1—Recite Math. A2—St. Room for Math.
1:30 to 2:00	Drawing	A1—St. Room for Math. A2—Recite Math.
2:00 to 2:30	St. Room for Math.	St. Room for Math.
2:30 to 3:00	B1—Recite Math. B2—St. Room for Math.	Mechanical
3:00 to 3:30	B1—St. Room for Math. B2—Recite Math.	Drawing
3:30 to 4:00	English	English
4:00 to 4:30	Shops	Shops
4:30 to 5:00		

APPRENTICE BOYS

This group of boys are boys who have started to learn a trade in one of the factories of the city. They are sent to the continuation school one-half day per week without loss of time. These boys are between the ages of 16 and 21, and with an education ranging from the sixth grade thru the high school.

The course of study this group of boys are following has been approved by the superintendents of the factories sending the apprentices. A study of Chart 3 will explain their course of study. Under shop theory comes the study of the different machines used in machine shops, the materials used, shop management, and shop efficiency. These boys receive better actual shop practice and experience in the factories where they are working than could be given them in the school shop. Some of these boys attend our night school and take up different work from that which they do in the factories.

Under drawing are given the regular courses of drawing to beginners, eliminating all unnecessary problems. To those who wish kinematics, that is given, to others

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gears and form cutters are given, and to the advanced students, advance machine design. Drawing is open to all, but boys who are working as pattern makers are recommended to take foundry practice, and those working in drafting rooms either foundry or machine shop practice.

Individual instruction is given in mathematics. Each boy is given the mathematics he is capable of doing, advancing as fast as possible. Arithmetic, algebra, trigonometry, strength of materials, and slide rule calculations are being studied this year.

CHART III

PROGRAM FOR APPRENTICE BOYS

TIME	SUBJECT
1:00 to 2:00	Shop Theory
2:00 to 3:30	Mechanical and Machine Drawing
3:30 to 5:00	Mathematics

PREVOCATIONAL GRADE SCHOOL CLASSES

In this group are all the boys from all the eighth grades of the city. These boys are required to have two hours per week of shop work for graduation. The shops are the same as those of the continuation school, and courses in printing and sheet metal-work have been added.

At the beginning of the school year these boys are given a choice of five out of seven shop subjects, and they spend eight weeks in each shop during the year. The shops are open from 8:00 A. M. to 10:00 A. M. and from 10:00 A. M. to 12:00 A. M. on Saturdays, and for those who cannot attend either of these classes, permission is given to attend either in the mornings from 7:30 to 8:30 on Mondays and Tuesdays or in the afternoons from 4:00 to 5:00 on the same days. These morning and afternoon classes are regular continuation school classes, but are open to prevocational boys from the grades.

During the regular manual training periods for the boys of the eighth grade, mechanical drawing is given. Under this plan the boys receive a very thoro foundation for drafting along all lines, and they get a very broad knowledge of the work that each shop is supposed to do. This course is given with vocational guidance in view, but practical work is followed as closely as possible.

FULL-TIME TRADE CLASSES IN THE HIGH SCHOOL

In this group are boys who do not wish a regular high school course, and do not wish to go to work, but have made up their minds to learn a trade. They range in ages from 15 to 18, and are from grades 6 to 10. Boys who are backward in regular school work and are mechanically inclined are recommended to take this course. They may be recommended by their school principal, or their parents.

Their time is divided between drawing, shops, mathematics, general science, and similar subjects bearing directly on the trade they are planning to follow. All the work in the above courses comes under the Smith-Hughes act.

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REGULAR SHOP COURSE IN THE HIGH SCHOOL

This course is the same as all other high school courses. Some schools call this an industrial course, others the manual training course, and others the engineering course, all leading toward graduation. The shops are the same as those named for the continuation school, with furniture making an added subject.

ECONOMY IN USE OF THE SCHOOL SHOPS

If this topic is studied carefully it will be seen that the five shops: machine, foundry, forge, pattern making, and electrical are being in use continuously from 7:30 A. M. to 5:00 P. M. every school day, and on Saturday mornings from 8:00 to 12:00. Then again three nights a week from 7:30 to 9:30. The drafting rooms are in use about the same amount of time.

THE YOUNG WORKER AND THE PART-TIME SCHOOL[1]

OWEN D. EVANS

Principal, Boston Continuation School, Boston, Mass.

WITH the prospect that compulsory continuation schools will soon be established thruout Massachusetts, you as instructors in vocational schools and departments are likely to have a considerable part in the establishing and administering of part-time schools for young workers. This problem is essentially one of the sympathetic handling of young people. Many interesting facts on the human side of the problem could be presented, but you as teachers are familiar with that phase; so I shall give you here only a somewhat dry, semi-statistical statement of the essential facts in organizing and administering such a school. I shall try to give you from the experience of the Boston Continuation School the answers to those questions which naturally confront the instructor faced with the responsibility of handling this problem in his own community.

The problem is to provide suitable part-time instruction for not less than four hours each week during working hours for the 14 to 16 year old boys and girls who leave the regular schools to go to work. The characteristics of adolescent pupils have been definitely classified. The continuation school group reveals these salient characteristics more markedly than do pupils in regular schools. This age is a period of rapid growth, of liability to nervous breakdown, of tremendous energy—especially in boys—of periods of depression and apparent laziness, of physical awkwardness, quick temper, self-consciousness, exaggerated opinion of their own rights, of moods and impulses, of violent likes and dislikes, of love of adventure, of violent misunderstanding caused by not being on the right apperceptive basis. There is need of plain nutritious food, exercise and fresh air, regular habits and plenty of sleep. The age of imitation and plastic memory is past. Reasoning ability, judgment, power of attention are growing. The children reflect environment for good and for evil. Team work appeals to them. They respond willingly to firm, quiet, courteous treatment. They resent the inflicting of penalties. They like to know the reason for things.

They are more quiet and steady in conduct than the children in regular schools. Less than 40% of them have left school to go to work because of economic necessity. More than 60% have gone to work because they will not or cannot carry the work of a regular school. They dislike

[1]A paper read before the Boston Manual Training Club, March 8, 1919.

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school. Forty per cent of them are children over age, who have left school between the 4th and 8th grades. Naturally a larger percentage of mentally deficient children is found in this group than in an equal number of day school children.

About 60% of our pupils are graduates of elementary schools, or are first year high school pupils. Most of these so-called high school pupils have failed in their high school work. Less than 5% of them reached the second year of high school or a higher grade. In age they are very evenly distributed from 14 to 16, but during the last two years they have been going to work at a younger age, so that over 60% have not reached their 15th birthday. It is evident then that the chief problem of the continuation school is to provide suitable work for elementary school graduates. The usual distribution of the sexes is: boys, 60%; girls, 40%. During the past year, however, the number of girls has tended to increase so that now we have boys 56% and girls 44%.

Very few of these pupils are blocked off from desirable jobs or promotion because of the required school attendance. Practically no such cases arise among the girls. Among the boys the question does not arise in more than 3% of the cases and when it does, practically every such case is satisfactorily adjusted thru a visit of a teacher. The determining factors in obtaining desirable jobs and promotion are ability, personality, and industry on the part of the pupil, rather than the existence or absence of a compulsory school attendance requirement.

Drifting from job to job seems to be inherent. We have had very little success in checking it. The group as a whole averages two jobs a year. The drifting is restricted, however, to about 20% of the children and this small group will average from eight to twelve jobs per year.

The characteristics of the group just described determine the functions of the part-time school. They are: (1) the conservation of the education already acquired, and the extension of it; (2) the providing of opportunity for prevocational experience to help in the choice of a vocation; (3) vocational guidance and follow-up work; (4) the establishment of an efficient employment bureau; (5) tying school work with the job so far as possible.

The value of prevocational shops in continuation schools has been so much discussed that there is a prevalent error that academic work is neglected. Such is not the case. Each pupil devotes half of the school time to academic work, and many of those who have left school in the lower grades devote full time to academic work.

Housing may be provided in scattered rooms of regular schools or in a central plant devoted exclusively to part-time work. The central plant is decidedly preferable. Unless a number of these children are grouped together it is impossible to provide the variety of shopwork and classwork essential to their individual needs. The responsibility for the group should be centralized. It will surely be neglected if delegated to an already over-burdened master of a day school to whom this work must necessarily be a side issue.

Classes provided are, for boys: General classes—entry and ungraded; Prevocational shops and classes—machine, electricity, printing, woodworking, sheet metal, mechanical drawing; Commercial—office practice, bookkeeping, and typewriting. In addition, where a store or factory has enough young workers to make one group or more, and a classroom is available, a teacher is provided for classes in these places of employment. For girls, the general, commercial, store and factory classes are the same as for boys—the detailed work of course being adapted to girls. The pre-

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vocational classes are: dressmaking, millinery, power machine operation, cooking, sewing and other household arts.

Details on courses of study cannot be given here except to note that in arithmetic and English interest factors derived from the pupils' employment and shop work make them very different studies from the arithmetic and English which these children disliked in the day schools. All pupils have civics and hygiene. The big idea which affects continuation school work is that we must make good citizens. These children need simple, homely, personal things in civics and hygiene. The vital thing for each of them is not "How many members are there in the lower house of the legislature?"; or "How many bones are in the foot?"; but "What is my duty as a young worker to my family, my neighborhood and my employer?" and "What care should I observe to keep myself in good health and to make myself attractive and capable?"

Four hours per week is a very short time, but the ever astonishing fact is how much the pupils accomplish in four hours, rather than how little. The influence of the school stays with these children from week to week modifying their point of view, directing their thoughts and activities. Ten weeks of such experience mean very much more than the mere 40 hours of school given during that period. In time we shall probably come to 8 hours a week or even half time. In my opinion 4 hours is enough for a start. This work is yet in the experimental stage. A great deal of time and expense are involved in getting equipment and training teachers thruout the state. An increase of hours can more wisely be made after a body of specially trained teachers has been developed.

An approximate distribution of this 4 hours or 240 minutes is: for shop or commercial work, 120 minutes; arithmetic and drawing, 40 minutes; English, oral and written, 40 minutes; civics, 20 minutes; hygiene, 20 minutes. The related work for shop studies is essentially mathematics and drawing. If it is given by the academic teacher it needs close cooperation from the shop instructor. In many cases it is wise to have it given directly by the shop instructor, but not in the shop. We find that as long as the class stays in the shop related work is neglected because straight shop work is continued.

All new pupils are placed in an entry class where after careful observation, supplemented so far as possible by a follow-up visit, they are transferred to the class they choose. They rarely stay in the entry class more than three weeks. A subsequent transfer from one class to another is freely allowed, but relatively few pupils ask for it. The first classification of pupils comes in requiring those who have had high school work to report on Wednesday, grammar school graduates on Tuesday or Thursday, and lower grades on Monday or Friday. High school pupils tend toward commercial work. Among boys, the brightest ones tend to elect machine shop or electrical work, and the slowest woodworking. In general, pupils of grades 5, 6, and 7 are placed in ungraded academic work. The ability to do a certain piece of work, especially in shopwork, depends quite as much on age and environment as it does on having completed a certain number of grades in the regular school. Accordingly the seventh grade pupil and the one who has finished the first year of high school are fairly equal in ability in shop and related work.

New pupils enter the school every day in the year just as old pupils reaching the age of 16 years leave it. This makes it necessary to have each week's work an independent unit so far as possible. At the same time we try to have an instructional progression in these units.

For teachers we have men for boys' classes

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and women for girls' classes, except in commercial studies where the classes are mixed. Even commercial classes should be segregated. The teaching program covers 32 hours per week. A shop teacher has 28 hours of shop teaching, and the rest of the time for the upkeep of the shop. An academic teacher has 20 hours of teaching, and uses the remainder of the time in making follow-up visits to the pupils' places of employment or homes, in order that information may be obtained as to the pupils' individual needs. In general, one shop teacher and one academic teacher form a team which handles from 175 to 280 pupils per week in ten groups of from 17 to 21 pupils each. The academic teacher is expected to keep in touch with the shopwork and the shop teacher with the academic work.

Shops are equipped with man-size machinery, and in the shop, exercise work is reduced to a minimum. A commercial if not marketable product is expected wherever possible. In the classroom we had a theory that chairs and tables as school furniture were better adapted to individual work than regular school desks. We find, however, that in general the regular desks and dignified school surroundings are preferable. The teachers, however, do very little group teaching, trying in every way to make the classwork individual.

Teachers must be specially trained for this work. For shop instructors we use skilled trades people who have had at least eight years trade experience and have taken the special instructors' training course. Academic teachers are normal school graduates or college graduates who have had a special instructors' training course. It requires two or three years of continuation school experience for the average good teacher to get a mastery of our special problems. The salary of these teachers should be greater than that of elementary school teachers in consideration of the longer hours and the greater difficulty of their special problems.

In relating school work to the pupils' employment, commercial subjects present few difficulties; store and factory classes work out well. In the central school our shops represent fundamental trades so that most of what a pupil acquires there, such as precision, neatness, use of drawings, use of stock, and setting machines, he can carry over in any trade. We do not try to separate trade extension pupils from prevocational pupils in our shops. The number of pupils whose school work ties up fairly closely with employment is: in store and factory classes, approximately 100%; in commercial classes, almost 100%; in power machine operation, 50%; in dressmaking and millinery, less than 5%; in printing, 50%; in machine shop, 25 to 40%; in woodworking and electricity, less than 5%.

Productive shop theories are very hard to apply in part-time work. With a different group in the shop every two hours, involving loss of time and supplies, delayed deliveries, and a varying degree of ability, we have difficulty in carrying an outside order thru satisfactorily. In general, we compromise on a set of preliminary exercises, and a series of shop projects leading to a commercial or marketable article. We try to make something useful but we do not worry about the market for it. We must try to get an instructional progression in work, and at the same time have each week a unit in itself. After all our job is instruction. Our product is boys and girls. All recognize the value of real work and marketable products, but there remains a great deal to be said as to the value of the exercise which trains in fundamental operations. We can get straight, productive work on power machines, dressmaking, millinery, and home sewing, the latter product being absorbed by the pupils. In

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printing there is no lack of real products. Machine, woodworking, and sheet metal shops have a combination of exercise work and real work. The electrical shop has no commercial product since it is impossible to go out on installation work. The shop exercises, however, are very practical.

The war has opened no new permanent lines of work to these children, altho there was a great increase in the number employed, particularly in factories and shops.

The cost of this instruction is relatively high. The annual per capita cost is about $15 as against $45 for elementary schools and $85 for high schools. The pupil hour cost for Boston for the year 1918 was $.103 as against $.21 for the Boys' Trade School, $.172 for the Girls' Trade School, $.084 for all high schools, and $.049 for all elementary schools. It is to be noted that the state pays one-half of our costs, which would make the net cost to the community something between elementary schools and high schools costs.

Pupils temporarily out of work need constant attention. They cannot be returned to the day schools because they do not fit there. On any given day from 10% to 15% of the boys are out of work and from 5% to 8% of the girls. We maintain an efficient employment department in the school and the children are instructed to report there whenever they lose a job. This gives us a good hold on absentees. The value of the employment work cannot be over-emphasized since it keeps these children from running the streets in idleness.

A small number of children do not wish to work; perhaps 3% of the boys and almost none of the girls. The others are eager to get back to work and are very grateful for the assistance which the school gives them.

Evening school attendance does not exempt children from attending the continuation school but permits to attend evening school are freely given to all children who ask for them. The fatigue element in evening school work for young children is well known. About 5% of all our children ask for and receive evening school permits.

Discipline in the school is in general very easy. These children are steadier than children of the same age in regular schools. We allow them considerable freedom which they do not abuse.

Attendance and truancy make a good showing in comparison with other schools. Two consecutive absences make a "truant." Investigation by the attendance department shows that more than half of such absences are understandable and excusable. This group among the girls is about one-third of 1%; among the boys it amounts to about 3%. There are those who are troublesome and are wilfully truant. This group of children suffers much from sickness and accident. Many of them run away from home. They frequently change home addresses and are permanently or temporarily lost. A normal state of affairs for the Boston Continuation School is indicated by these figures for the week of February 17, 1919:

	Boys	Girls	Total
Absence verified and approved	99	61	160
Truants, that is, reason for absence unverified and not approved	258	17	275
Those O. K. in all classes	3043	2635	5678

In the latter group the percentage of attendance from September to the end of January has been 95.5%. During the school year ending June, 1918, the percentage of attendance in the Continuation School was 92% as against 92% for all elementary schools and 94% for all high schools in the city.

The wages and types of work in which these children engage are not determined by the fact that they must attend continuation school. The determining factors are:

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(1) the supply and demand of labor in general; (2) restrictive legislation on hours of labor; (3) restrictive legislation on the use of certain dangerous machines; (4) restrictions as to the age and other conditions governing apprenticeship. Most of these children work for a flat weekly wage which is not modified by the fact that they must attend the continuation school. Where they work on commission or piece work they suffer some loss because of their attendance at school. The convincing proof of the foregoing is shown by the fact that during five years the numbers of pupils were: 2300, 3400, 4500, 5500, 6500; and that meantime the average weekly wages increased as follows: $4.10, $5.25, and $7.00.

It should be noted that the part-time education of the 14 to 16 year old worker is a very different problem from that of the 16 to 19 year old group. The first is the drifting, adolescent child who needs essentially prevocational experience and vocational guidance. The second needs trade extension work including related work, and training in citizenship. For the second group training on the job should be given by trained, instructing foremen, on actual production, under the supervision and with the approval of educators. For the younger group the fundamentals of actual shop conditions can be fairly well supplied in the school shop. But for the older worker shop conditions are too varied and complicated to be reproduced in school. This group should get shop training in the shop, and from the part-time school should get training in citizenship, education for avocation rather than for vocation, and should specialize in drawing, reading blueprints, related mathematics, and advanced work in English, history, trade mathematics and science.

In conclusion it should be noted clearly that the problem of the 14 to 16 year old worker is essentially a local problem. Deductions made from the experience of the Boston Continuation School are valuable and suggestive. They are not necessarily conclusive as to the best method of handling these children in another community. The proposed state-wide, compulsory bill wisely limits itself to general provisions. It is to be expected that considerable latitude will be allowed each community in working out its own problems.

THE USE OF THE INITIAL LETTER

RALPH W. POLK
Director Vocational Instruction, City Schools, St. Joseph, Mo.

ONE OF the most used—and abused—features of display typography is the initial letter. It is an important element in modern printing, worthy of more intelligent consideration than is given it by the average printer, and even by many schoolmen.

Initials at the beginning of chapters, or in miscellaneous printing, are by no means a new fad. The practice of using them dates back to the manuscript-writers of the middle ages, and many beautiful examples of the early hand-drawn initials are still preserved. Printers have followed the practice continuously since the invention of the art.

The initial letter may be said to serve a double purpose on the printed page—that of ornamentation and attraction. When carefully chosen, it adds greatly to the appearance of the page, and lends beauty and interest, while its theoretical purpose is to call attention to where the reading matter begins. It affords a con-

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venient means of ornamentation, and often satisfies all demands along that line. See Fig. 10.

However, an initial improperly chosen may mar rather than beautify the page.

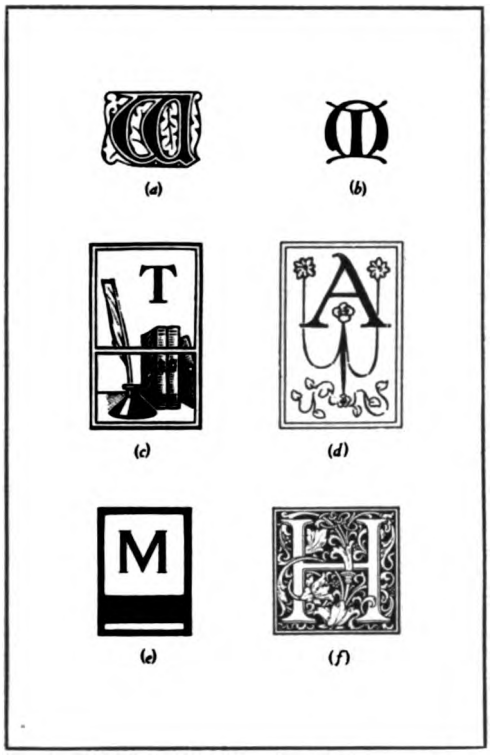

FIG. 1.—REPRESENTATIVE INITIAL DESIGNS

Many otherwise good pieces of printing are ruined by poorly selected and improperly placed initials. If a few simple rules are

HERE is an initial letter which violates both tone and shape harmony. It is too condensed, and also too bold in tone. Compare this with Fig. 4.

FIG. 2.—A POORLY CHOSEN INITIAL

followed, good results may be had without any extra expenditure of time or effort. We shall attempt to enumerate and explain briefly these rules.

There are three points to be considered in the choice of an initial letter: (1) tone harmony, (2) shape harmony, and (3) appropriateness. By tone harmony we mean

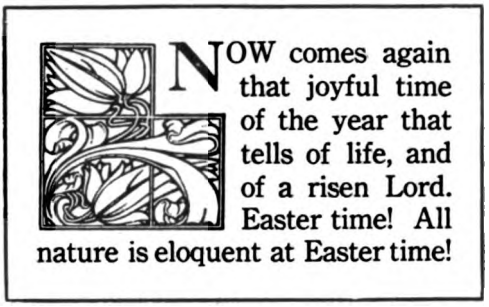
NOW comes again that joyful time of the year that tells of life, and of a risen Lord. Easter time! All nature is eloquent at Easter time!

FIG. 3.—APPROPRIATENESS AND TONE HARMONY

a harmony of color or density on the printed page. Heavy-faced type must be accompanied by initials of heavy tone, and vice-versa. Shape harmony has to do with congruity of shapes of the different elements which make up the type form. Fig. 2 contains an initial which violates both tone and shape harmony. Appropriateness means consistency between the initial and the text. The initial in Fig. 3 is well suited to the text-matter, and thus satisfies this requirement.

Letters of larger size in the same type series often make pleasing initials. Fig. 4 shows an 18-pt. Cloister capital used as an initial for 8-pt. Cloister Oldstyle type.

In Fig. 1 a few representative initial

MORE satisfactory results in business will be obtained by the use of better printing and carefully prepared advertisements

FIG. 4.—CORRECT ALIGNMENT OF INITIAL WITH TEXT

designs are reproduced. The Jenson Initial (a), patterned after the old woodcut designs, is suitable for use with a rather heavy-faced Oldstyle type, on rough paper.

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The Pencraft Initial (c) should be used with body type of light tone. The initial (e) should be used only with type of plain, heavy characteristics. The literary design

INITIAL letters should harmonize in shape and tone with the type matter with which they are used. If light face types are used, the initial should be correspondingly light. Use heavy tones together

FIG. 5.—CORRECT ALIGNMENT OF INITIAL WITH TEXT

of (d) limits its use to work of a literary nature.

After a suitable initial letter has been chosen, the matter of alignment with the text-matter must be considered. The three following rules should be observed:

THE tone of the initial should be as nearly uniform as is possible with the tone of the body matter. Good results cannot be obtained unless this important rule is always followed.

FIG. 6.—WRONG INDENTION OF INITIAL LETTER

WE NOTICE that in ordinary composition, all lines at the side of an initial, except the first, are indented. The letters T, V, W, and Y, however, are exceptions to this rule.

FIG. 7.—PROPER INDENTION. COMPARE WITH FIG. 6

1. The top of the initial letter, or of a rectangular initial design having a straight top, must align with the top of the first line of the text, as in Fig. 4. Whenever possible, it is desirable, also, to have the bottom line of the initial align with the bottom of the next line running alongside, as this same figure shows. This cannot be done in many instances.

2. Where the initial design is irregularly shaped, the top of the design proper should be aligned with the text. See Fig. 5.

The first word of the paragraph is never capitalized when Gothic types are used because this style of letter is not legible in cap lines. For example, read INSTEAD

FIG. 8.—LOWER CASE LETTERS FOLLOW DIRECTLY AFTER INITIAL IN GOTHIC TYPE

3. The margins at the *right side* and *below* the initial *must be equal* and in accordance with the general character of the page. If insufficient space is left around the initial the matter will look crowded and confusing. On the other hand, if the margins are too great the initial will not seem to be a part of the page, and the even tone of the whole will be destroyed. This is the rule which is most often overlooked, but one of the most important.

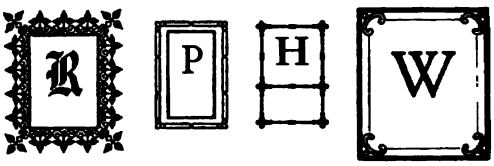

FIG. 9.—INITIALS MADE WITH RULES, BORDERS, AND TYPE

The letters A, L, T, V, W, and Y present a special problem because of their irregular shapes. A and L, when used alone as initials, are difficult to space pleasingly because of the wide shoulder at the side nearest the first line of the text. Some printers solve this problem by mortising the letter to allow the first line to approach the face of the initial.

T, V, W, and Y may be spaced in such

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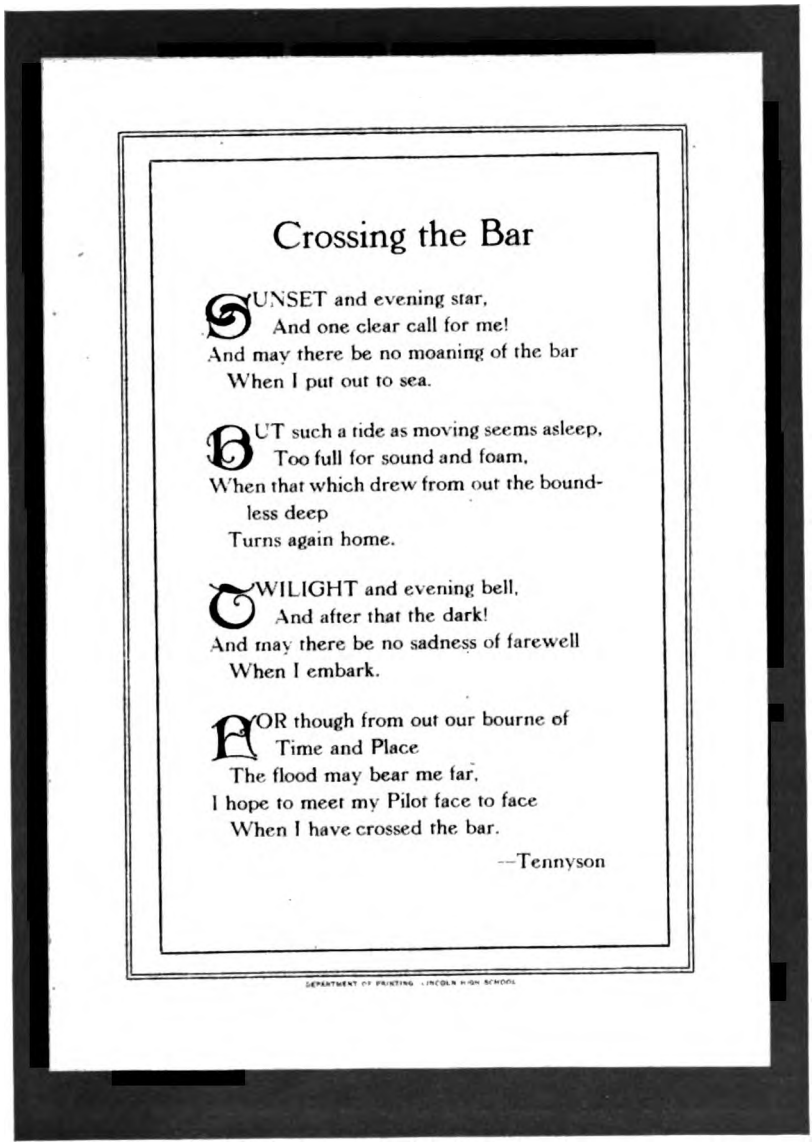

Crossing the Bar

SUNSET and evening star,
And one clear call for me!
And may there be no moaning of the bar
When I put out to sea.

BUT such a tide as moving seems asleep,
Too full for sound and foam,
When that which drew from out the boundless deep
Turns again home.

TWILIGHT and evening bell,
And after that the dark!
And may there be no sadness of farewell
When I embark.

FOR though from out our bourne of Time and Place
The flood may bear me far,
I hope to meet my Pilot face to face
When I have crossed the bar.

—Tennyson

DEPARTMENT OF PRINTING, LINCOLN HIGH SCHOOL

FIG. 10.—AN ATTRACTIVE PIECE OF PRINTING WHICH DEPENDS ENTIRELY UPON INITIAL LETTERS FOR ORNAMENTATION

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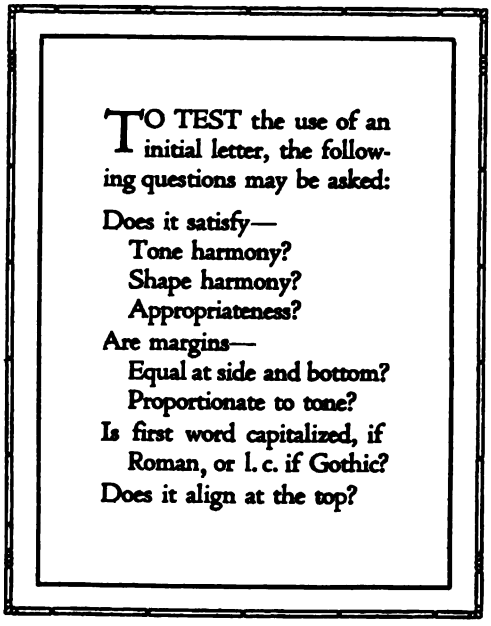
a way that the lines of the text alongside will be flush against the body of the initial, as ample margins are afforded by the


TO TEST the use of an initial letter, the following questions may be asked:
Does it satisfy—
Tone harmony?
Shape harmony?
Appropriateness?
Are margins—
Equal at side and bottom?
Proportionate to tone?
Is first word capitalized, if Roman, or l. c. if Gothic?
Does it align at the top?

A TEST

large shoulders of these letters. Fig. 6 shows the common method of spacing this type of letter, and Fig. 7, the method here recommended. The superiority of the latter is readily seen.

It will be noticed that in practically all the accompanying figures the word of which the initial letter is a part appears in capital letters. This custom should be followed regularly. If the first word is extremely short, as "No," "It," etc., then the first two words should be capitalized. The only exception to this rule is in the use of Gothic types. They are not legible in all-capitals, and for this reason we follow the initial with lower-case letters, as in Fig. 8.

A splendid assortment of initial letters will be found listed in the specimen books of the leading type founders. It is not essential, however, that the printer should have a large supply of these stock designs, as he may make up initials by using rules, borders, and utilities in combinations with the letters. It is often necessary to do this, in order to secure an initial of just the proper tone and style. A few of such initials are reproduced in Fig. 9.

The student of typography will find great possibilities in the use of initial letters, if he will use them in accordance with the recognized principles of good design.

MASSACHUSETTS STATE CONFERENCE OF MANUAL TRAINING INSTRUCTORS

GEORGE M. MORRIS

Assistant Director of Manual Arts, Boston, Mass.

THE first conference of manual training instructors to be conducted by the Massachusetts State Board of Education was held at the Massachusetts Normal Art School, Boston, on February 14, 1919. The program was a particularly strong one, and both the morning and afternoon sessions were well attended. Frank W. Wright, deputy commissioner, Massachusetts Board of Education, presided and opened the meeting with an expression of gratification at the good response to the call of this first meeting of its kind.

The first speaker was Edward Thatcher, of New York City, who gave a practical demonstration on "Construction Work with Tin Cans as Raw Material." This work has proved of special interest to wounded soldiers where it has been pre-

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sented as a feature in occupational therapy. Shell shocked men seem to have taken to the work, offering, as it does, an excellent opportunity for the play of the imagination. Variously shaped cans are selected for the different parts of the toy objects which are made by assembling parts of cans. For example, in making a locomotive, two soup cans form the boiler, a Lyon's tooth powder can forms the whistle, a part of a tea can forms the cab, ends of condensed milk cans soldered together form the wheels, etc. Mr. Thatcher exhibited a large variety of attractive toys including auto trucks, a tractor, a steam roller, water and sand wheels, a war tank, boats of several kinds, and a "real tin Lizzie." He also showed house equipment such as a stove, wash tubs, sink, tea kettle, bath tub, wash stand, etc. One beauty of the work is that the forming of these objects, which if made from the flat tin would be very difficult, is all done for one in the proper shaped cans. As a home activity, it is full of interest to boys from 10 to 13 years of age. It may also be used to considerable advantage in school manual training as a means of "getting hold" of boys to whom more formal work does not appeal. Mr. Thatcher gave an interesting demonstration of some of the operations such as opening cans, scribing lines, cutting to line, turning sharp edges over, etc.

He also explained the method of making a wheel, told of the requirements for good soldering, and gave directions for cleaning and painting the finished toys. His presentation of this new and original subject greatly interested his audience, as was evidenced by the questions asked at the end of his talk.

The first speaker of the afternoon session was Willis B. Anthony, director, Practical Arts Department, Fitchburg State Normal School. His subject was "Forward Marching Steps in Practical Arts," which he treated with special emphasis on the preciousness of boy power. He spoke with conviction against the waste in having the boy make "sawdust and shavings" too much of his time. Mr. Anthony would make more general use of machines, in order that time would be saved for the more developing experiences. He made a plea for more time for the practical arts, and pointed out the necessity of manual training instructors becoming better publicity agents in order to impress the value of their cause on the public mind. He referred to the wonderful results accomplished by advertising of the war agencies such as the Red Cross, the Red Triangle, war savings stamps, etc., and expressed the opinion that advocates of the practical arts should profit by these examples of what advertising can do. In conclusion he explained as the keynote of his subject the two words "service" and "saving."

In the discussion following Mr. Anthony's address, Chairman Wright spoke of the readiness with which children respond to appeals when properly presented, and told of a case where young children made contributions to a fund for boys in Porto Rico. Major M. W. Murray of Newton spoke of the necessity of teachers keeping abreast of the times and studying during vacations. He gave as some of the reasons why there was not better teaching: (1) Small salaries, (2) Too large classes, and (3) Too little time.

John C. Brodhead, assistant superintendent of schools, Boston, next spoke on "The Teacher of Manual Arts in the Light of Today and Tomorrow." As an introduction, he referred to his standards of a teacher of manual arts as having been established by his own corps of teachers in Boston. In taking the good points from each the ideal teacher would be found. First of all, the manual arts teacher should be a real live wholesome man or woman, and

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should take such recreation, exercise and rest as necessary to keep physically fit. He believed in having a hobby and riding it to keep a fresh interest in life. Cheerfulness will influence those in authority to adance salaries quite as much as any other one factor. In matters of scholarship, he referred to the desirability of knowing more than enough to teach the one subject. The use of pure speech and a general interest in the academic work of the pupil will influence the pupil favorably. The relations with the pupil were emphasized. Teachers should analyze their methods of discipline, and determine whether they are peremptory or such as will lead their pupils to willingly do the right thing. The teaching conditions should be observed carefully. The room should be well ventilated, and the work should be planned to eliminate the fatigue element as much as possible. Mr. Brodhead expressed himself as opposed to women instructors of shopwork where the aim was to give a knowledge of a trade, except in such cases as where the trades themselves have women workers. He considered the teaching of retarded pupils, lower grade desk forms of manual training, academic work in prevocational classes as good opportunities for women of mechanical tastes. In the matter of training for teaching the two sources, the schools for training shopwork teachers, and the trades, were both considered inadequate preparation for the manual arts teachers of the future. The teacher of high school and normal school training should supplement this preparation with trade experience during vacations. The teacher from the trade should take a year if possible in some school such as the Sloyd Training School, Teachers' College or Bradley Polytechnic Institute in order to learn something of the methods of teaching. All teachers should aim to do more than for what they are paid, and strive to become equipped for the advanced position before the opening presents itself. In conclusion, Mr. Brodhead gave as the aim of any manual arts course the developing of the pupil so that, because of it he knows more, has become more skilful, is a better individual, and has produced something worth while.

Chairman Wright called attention to the already crowded program of schools. In adding to the present programs a "physical" change is made. In modifying the courses of study thruout the school, a "chemical" change would be made. He made a plea for manual arts instructors to so influence the school work that a "chemical" change would result. He felt that the time had come for manual training to "come up stairs" and be more than an unrelated subject in a crowded curriculum. That this is being accomplished in places was shown by the next speaker, Arthur P. Irving, principal, Buckingham School, Springfield, Massachusetts.

Mr. Irving, in treating the problem of "Working It Out", told of the development of the manual arts department in his school from the two hours a week of manual training and cooking and sewing to the present junior high program which allows both boys and girls of the "object minded" type to have 8 to 10 periods a week of practical arts. At first, Mr. Irving was somewhat skeptical of the prevocational idea, but the need of doing something to keep the boys and girls from leaving school soon convinced him that it was at least worth the trial. At first vocational work was provided for the boys only, but later a practical arts course was started for the girls. He now has three woodworking shops, one metalworking shop and a printing room for the boys, and two kitchens and a sewing room for the girls. The pupils choose between the general course and the practical arts course in their sixth grade. This choice is made after consult-

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ing their parents, and with the help of vocational guidance from the teachers. At first there was some prejudice on the part of the parents against the practical arts course, but now that the work is better understood this prejudice is growing less apparent. The vocational course pupils give one-third of their day to the practical arts. The academic work is related to each of the practical arts activities as closely as possible. There are three kinds of related work, that which is taught preceding the work on the shop problem, that which is carried on at the time the shop problem is in progress, and that which comes after the shop problem has been completed. The related work is not easy to do, but the increased interest of the pupils is very gratifying. The shop teacher spends some of the shop time in assigning the related academic problems which are solved in the classroom under the academic teacher. Each activity is followed for one-half the school year when a change is made. The numbers of pupils in a shop group does not exceed seventeen. The organization permits a mingling of all pupils at certain times such as at recess, during the physical training periods, and in general assembly. This is a valuable feature tending as it does toward democracy and away from social stratification. The two courses, the general and the practical arts, are parallel with near educational values. A change from one course to the other is possible at all times, and each course leads to the high school. Mr. Irving feels that care should be taken not to give up too much of the cultural in education. Every pupil is entitled to all the culture that we can give him. In concluding his talk, Mr. Irving said that the scheme was so new that there would no doubt be developments resulting from further experience.

At the morning session of the conference, a committee on resolutions was appointed, consisting of Edward C. Emerson, of Boston, chairman; F. W. Ried, of Framingham, Florence O. Bean, of Boston, Ralph W. Babb, of Lynn, and Arthur J. Bean, of Worcester.

REPORT OF THE COMMITTEE ON RESOLUTIONS

The Committee on Resolutions is cognizant that war conditions have changed perceptibly the outlook for all forms of manual instruction. Therefore, be it resolved:

1. That the State Board of Education be memorialized at this meeting to bring together the manual training, vocational an other industrial training teachers, for the purpose of discussing problems closely related to their work.

2. That it is vitally important that a semi-yearly meeting be held in suitable geographical centers so that all teachers in the state may benefit therefrom.

3. That this body go on record as being in favor of using varied materials, that is, using materials other than wood, tending toward differentiated content in courses.

4. That there should be a closer relation between local school authorities and the administrative officers of manual training in order to form absolute, not theoretical, coordination.

5. That there be an effort made to bring about a clearer conception of the fields of endeavor in vocational work, prevocational work, manual training and mechanical drawing, and a closer personal cooperation between the instructors of these subjects.

6. That the State Board of Education be asked to publish bulletins on manual training which shall include reports of this and similar meetings, and be it further resolved that there should be a recognition of manual training by the State Board of Education in the appointment of an agent assigned exclusively to this type of work.

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EDITORIAL REVIEW OF THE MONTH

THE MASSACHUSETTS CONFERENCE OF MANUAL TRAINING INSTRUCTORS

ON THE fourteenth of February there was held in Boston a meeting of more than usual importance. It was the first conference of manual training instructors conducted by the Massachusetts State Board of Education. Anyone who reads the report of this meeting written by George M. Morris and published in this issue cannot fail to recognize the significance of the meeting. It gives promise of a better future for the manual arts in the schools of Massachusetts, and judging from the course of events in the past, any impulse that gathers much strength in Massachusetts always reaches the rest of the country in due time. We commend this report for careful reading.

PRESIDENT BUTLER EMPHASIZES THE IMPORTANCE OF CONNECTING FORMAL EDUCATION WITH INDUSTRY

PRINTED in the January issue of the *Teachers College Record* is an address by Dr. Nicholas Murray Butler, president of Columbia University, delivered before the Association of Colleges and Preparatory Schools of the Middle States and Maryland. In this address Dr. Butler discusses certain educational reforms in the light of lessons learned from the world war. To one who recalls the service rendered by Dr. Butler in the cause of industrial education, and especially that elementary phase of it we call manual training, in the early years of its history in this country, thru his connection with the industrial education of New York City and the New York College for the Training of Teachers which preceded the present Teachers College of Columbia University, it is encouraging to notice that after years of effort in the field of university administration, with opportunity to view education from the top, he reasserts the soundness of the "psychological and economic" arguments behind such work and foresees for it, "supplemented by new instrumentalities," a larger and more important place in the education of the future; and says that there is every reason why this division of school work should be given a new impulse. Below we quote his exact statement:

> In an industrial age like that in which we are living and are likely to continue to live, it is little short of monstrous that there is so slight a direct relationship between formal education and industry. Fully thirty years ago a well-organized and clearly defined movement was undertaken in the United States to bring the fundamental and elementary industrial processes into use as general education instrumentalities. Largely as a result of the Russian exhibit at the Centennial Exposition of 1876 in Philadelphia and at the Paris Exposition of 1878, the attention of American teachers was drawn to a practical method of using the elementary principles of the mechanical arts as subjects of school instruction and training. Sound physiological, psychological and economic arguments were urged for this step and some headway was made towards accomplishing the end which the reformers of that day had in view. Despite some distinct successes here and there and despite the soundness of the principles on which the movement was based, it failed to establish itself generally for a variety of reasons which need not here be detailed. For one thing, the movement was somewhat in advance of the public opinion of the moment, and to be in advance of public opinion is quite as fatal to any new departure as to be behind public opinion. There is every reason now why this subject should be taken up anew and why those general educational instrumentalities that have done such yoeman's work for generations should be supplemented by new instrumentalities designed particularly to train the hand, the eye, the power of coordinating the two, and the constructive capacity of youth in ways that will eventually add to the economic usefulness of the individual and to the economic advantage of the community. It is specially important, by linking handwork with capacity, artistry, and

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understanding, to restore that joy in the job with its resulting satisfactions, both individual and social, which mass-work and highly specialized industry have combined so largely to destroy. It is not likely that the importance of education to creative industry and the importance of creative industry to education will longer be disregarded.

VOCATIONAL EDUCATION LAW IN ILLINOIS

AT LAST the State of Illinois has passed a vocational education act. On the evening of March 6th Governor Lowden signed the Kessinger vocational educational bill which enables the state to participate in the advantages of federal aid under the Smith-Hughes act, and provides a State Board for Vocational Education. While this act is far from meeting the demands of those persons who believe that Illinois should at once reap the benefits of an adequate vocational education law, it is much better than no law, because it provides for the development, tho very conservative, of the present state methods of stimulating vocational training.

TRAINING INDUSTRIAL TEACHERS IN CALIFORNIA

CALIFORNIA is making a division of the field of teacher training under the Smith-Hughes act so that the training of supervisors comes under the professor of vocational education at the University and the training of teachers of "supplemental subjects" under a director of classes for teachers of trade and industrial subjects. Charles L. Jacobs, who is in charge of such classes had under his supervision last term 49 students, 38 of whom were men and 11 women. In a report he made recently to the director of the School of Education at the University he said, "About two-thirds of the students in these classes are now engaged as regular teachers in either public or private schools. Not a few of these teacher students are manual training instructors preparing to transfer into the vocational training field."

The division by crafts was as follows: Automobile repair, 2; cabinet making, 11; carpentry, 6; cement work, 1; drafting, 1; dressmaking, 6; electricity, 6; machine practice, 6; millinery, 5; pattern making, 2; printing, 3.

The course of study embraces (a) presentations of the basic theories of vocational education and (b) discussions of the fundamental principles upon which the accepted content and method of teaching the supplemental subjects is based. It includes also (c) the giving of assistance in the development of subject content, and it provides (d) opportunity for each student to practice the teaching of his or her special subject under expert supervision and direction.

THE ARMY TRADE TESTS

JUST now we are hearing a great deal said about the army trade tests in their relation to industrial education. Because they have proven so successful in differentiating between men entering the army, there is danger that the schools will use them for a purpose they are not adapted. This fact was given special emphasis in the conference of specialists in industrial education conducted by the Bureau of Education in connection with the National Society for Vocational Education at St. Louis. Lieut. Col. W. V. Bingham said, "To use these particular tests as a means of testing instruction would be vicious, but there are going to be tests—graded tests which may be given in the schools, say every three months." Then teachers of trades will not have to depend upon their opinions but will have a means at hand of knowing the exact results of their instruction.

Lieut. Col. E. K. Strong, Jr. said that the army tests "are not good guides in

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teaching." He pointed out that the purpose of the tests was merely to separate men into four classes—experts, journeymen, apprentices, and novices and therefore the questions asked in these tests might cover the "by-products of the trade" instead of its essentials. He said he was very skeptical as to the value of the tests in their present form.

Several of the men present seemed to believe that out of this army experience in preparing tests would grow others that would be of great value in trade teaching, while others would refrain from placing any emphasis on such measuring instruments. Lieut. Col. J. J. Swan said that the manufacturers have been successful in standardizing machines, but now when we are attempting to standardize men also we should remember that they are brothers. There is danger of doing injustice. He said that the work of testing must be done by experts.

The process of obtaining the army tests was explained in detail by Col. Bingham. First, trade definitions were made. Second, information was selected concerning each trade. In doing this, civil service examinations, examinations given by trade unions and trade schools were collected, also data from the Bureau of Labor Statistics. Third, a first-hand study of tradesmen working at their jobs was made to pick out the essential elements. Fourth, the facts and information were combined and a list of oral questions prepared concerning trade information. (It was found to be useless to have the examination cover trade processes because the answers could not be standardized). Sixty to eighty questions were selected that seemed most promising. Fifth, these were given as a test to five experts in the trade. After studying the results all but forty questions were eliminated. Sixth, these forty questions were given as a test to eighty tradesmen whose skill was known so that they could be classified as (a) experts, (b) journeymen, (c) apprentices and (d) novices. After this test of the questions the number was again reduced to the final number—in some cases to twenty or twenty-four. The cost of this process was about $1,000 for each trade. To secure satisfactory tests for school use it is assumed that a somewhat similar process, but with a different purpose, will have to be gone thru.

SOME TRAINING BELONGS TO THE FACTORY AND SOME TO THE SCHOOL

NOT LONG ago *The Survey* published an article by C. G. Renold, of Manchester, England, one of the great north of England employers, from which we quote the following as it appeared under the heading "Education in Shop Processes and Trade Technique":

> The knowledge of most workers is limited to the process with which they are concerned, and they would have a truer sense of industrial problems if they understood better the general technique of the industry in which they are concerned, and the relation of their particular process to others in the chain of manufacture from raw material to finished article.
>
> It is possible that some of this education should be undertaken by technical schools, but their work in this respect can only be of a general nature, leaving still a field for detailed teaching which could only be undertaken in connection with an individual firm, or a small group of similar firms.

This statement recognizes the fact that we have referred to before, namely: There are certain kinds of training for industrial efficiency that should be done in the factory and at the employer's expense. Moreover, the employer is ready to do it—in fact knows he has to do it in order to have it done right from his standpoint. If this is so, then why should the public school attempt to do it? Why not spend its time and money on what the factory cannot do as well and ought not to pay for?

On the other hand, as the above quotation points out, there is industrial education

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of a more general type that belongs to the school, and in this country we have only just begun to undertake such work seriously. A vestibule school with a course of from five days to five weeks, more or less, in which a particular method of billing is taught, or the things to look out for in running an automatic machine, is the type that belongs to the factory to manage and to support. Such a school has no claim on the public for support. On the other hand, after the young worker passes thru the vestibule school and is "on the job" it is not only eminently appropriate, but ought to be demanded, that the public pay for continuing his more general education, especially if he is below the age of eighteen, in schools which he should be required to attend during a specified number of hours a week. Mr. Renold recognized the value of this broader industrial training in his first paragraph.

BOSTON'S NEW ASSISTANT SUPERINTENDENT

JOHN Cappelle Brodhead, formerly associate director of manual arts, Boston, was elected assistant superintendent last fall. For this position, Mr. Brodhead was selected from a large number of able educators who have shown administrative ability in the school system of the city. The need of a man well equipped to act upon policies relative to vocational and manual training led the School Committee to decide in favor of Mr. Brodhead who has for years made special study of this phase of education. That their selection was a wise one is well appreciated by all who are acquainted with Mr. Brodhead's fitness to handle not only problems in his special field, but also those of a general educational character with which in his new position he will have to deal.

Mr. Brodhead was born in New York City December 4, 1870. His father, a Civil War veteran, was a lawyer by profession with a fondness for mathematics and the avocation of civil engineering. His mother, a French woman of Belgian descent, was a teacher of French until her death in 1884. Mr. Brodhead's elementary education was in the Brooklyn public schools, numbers 1 and 11. In September, 1884, he entered the Brooklyn High School, but upon the death of his mother (his father died many years before), he went to Chicago. There, owing to a lack of German, then required in the Chicago elementary schools, he entered the graduating class of the Skinner School of which Ella Flagg Young was principal. In September, 1885, he entered the West Side High School where he was several times at the head of his class. In September, 1886 he entered the Chicago Manual Training School with a scholarship earned by high standing in the West Side High. Here his course of study included three years of Latin which shows the course to have been somewhat "cultural" in character tho with an emphasis on the mechanic arts. A part of the training consisted of tending the engine's boilers and pumps of the school. The shop problems required the carrying thru of practical jobs from the making of drawings to the running of machines, the castings for which were made in the Dearborn Foundry. At this time Mr. Brodhead had hopes of completing a mechanical apprenticeship course and later going to Cornell to study mechanical engineering, but the apprenticeship pay was so small that he accepted a position as draftsman with the Benjamin Machine Company, Evanston, Illinois, who were manufacturers of woodworking machinery. Here as the only draftsman he had a varied experience including designing, drawing, tracing, photographing, making blueprint paper, etc. He was advanced to the position of foreman of the machine shop and later became super-

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intendent of shops. From the Benjamin Machine Company, he went to Whiting, Indiana, where he was employed as draftsman on buildings, tanks, and structural steel work for the Standard Oil Company. After six or eight months of this kind of work, he decided to taste the life of the older communities, and in the fall of 1893 went to Boston where he found temporary employment as draftsman. He later accepted a position teaching in the Eliot School, Jamaica Plain. He organized night classes in this school, and continued as teacher until

JOHN C. BRODHEAD

1910 when he became principal, which position he held up to 1918.

Following 1893, Mr. Brodhead had two years of architectural work as member of the Boylston Real Estate Agency, Jamaica Plain, and in this time he designed and supervised the building of twelve houses in Boston. He designed his own home which is a beautiful bungalow. In the fall of 1896 he entered the school service of the City of Boston as a manual training teacher. In this capacity he taught in Dahlgren Hall, South Boston; Bennet School, Brighton; Prince School, Back Bay, and East Boston High School. For several years he assisted Frank M. Leavitt, the principal of manual training for the city, in supervising elementary manual training. In 1910 he succeeded Mr. Leavitt as assistant director of manual arts, the title being changed later to associate director of manual arts.

That Mr. Brodhead is a natural leader and of broad interests can be seen from his outside activities. Since 1893 he has been a member of the Handel and Haydn Society, was superintendent of the alto chorus for seven years, and has been librarian, secretary, and is now vice-president. He was the first president of the Boston Manual Training Club, which office he has held more than once. He was also president of the old Eastern Manual Training Association. In the summer of 1908 he conducted a party of teachers on a Naples to Glasgow trip with Mr. Leavitt. He spent the summer of 1911 in Italy. In the spring of 1914, with thirty other teachers and directors of art and manual training, he spent several months in Munich studying trade, continuation, and technical schools and manual training in the grades. When Germany declared war, he was in Budapest.

As a leader of boys Mr. Brodhead has shown himself exceptionally gifted. He has had several summers in boys' camps, Sherwood Forest, Little Squam Lake, New Hampshire, and C. Hanford Henderson's camp at Silver Lake, New Hampshire.

In his new position Mr. Brodhead will be the assistant superintendent in charge of the High School of Practical Arts, Hyde Park High School, Mechanic Arts High School, Boston Trade School, Trade School for Girls, eleven elementary schools, the Continuation School, evening schools and school centers. He will also have charge of industrial courses of all kinds, and state-aided schools and classes, prevocational schools and classes, household and manual arts, including gardening, citizenship classes, and summer review schools.

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He is particularly interested in the prevocational classes for motor minded boys to whom purely academic instruction does not appeal, and in the high school cooperative courses for boys who may be obliged to leave school early.

During the past year Mr. Brodhead had several calls to Government work, one from the Emergency Fleet, U. S. Shipping Board, and one from the Surgeon General's office with an offer of a major's commission. He was in communication with Washington when an urgent demand for his services in the Quartermaster's camp at Jacksonville, Florida, reached the School Committee. This resulted in his going to Camp Joseph E. Johnston in March, 1918, where he was director of shopwork for six months. At the end of this time the Boston School Committee urged his release from Government service, in order that he might assume the duties of assistant superintendent, to which position he had been elected in his absence.

MUST EDUCATE DESIGNERS

THE successful competition of American goods in American markets means superior quality in such goods. Superior quality means not only excellence in materials and workmanship but especially excellence in design. Excellence in design in American manufactured articles means trained designers, and it ought to mean trained American designers trained in America. And that means more schools of industrial art. This is emphasized in an article by Richard F. Bach of the Metropolitan Museum of Art, New York City:

There is but one help for manufacturers in the industrial art field—only one: education. They must educate designers, they must establish schools for training designers, they must realize that design is a cash asset, an all-for-business investment in every piece they turn out, in every yard of goods they print or weave. They must appreciate that design does not mean "fancy" pieces or over-elaboration. In short, they must come to the conviction that design means quality and that good design commands a good price. Birch is not mahogany; garish convolutions are not ornament. Refinement is the index of taste and taste is the keynote of American industrial advance. Education points out the difference between the artistic progress of France and the industrial art stalemate of America.

INTELLIGENCE AND TRADE SKILL

A FEW days ago we heard a psychologist say in reporting the results of some testing of mechanics done under his supervision, "We have found that there is a very high correlation between intelligence and trade skill."

Now that the psychologist has told us this in perfect scientific form, after making elaborate tests, it seems useless to dispute the truth any longer. Let us make the best of it.

"THE PROOF OF THE PUDDING IS IN THE EATING"

BEFORE a boy can receive a certificate or diploma in a state-aided vocational school in Massachusetts he must demonstrate his ability to meet actual shop problems on real work for a period of half a year. In furnishing proof he sends a certified report of what he has done. Here is one received from a graduate of the Holyoke Vocational School and published in a local paper:

Oct. 4, 1918.

Director of Vocational Education, Holyoke Vocational School, Holyoke, Mass.

Mr. Director:—I am enclosing herewith, my final report of Oct. 3d. I started my six months' shop practice in the Cowan Truck Co., of Holyoke, Mass., April 15, 1918, in the tool room. My rate per hour was 31 cents, $16.50 per week. I went on production about a month afterwards. Then I went on the laying out table until I went on the night shift, which started July 22d. Then I received a raise to 35 cents per hour which is $18.00 per week. I worked three weeks on the night shift and then they stopped it. I was then

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doing all around work. Aug. 4, I started on the day shift setting up, laying out, and spare man on machines for two weeks, and then I went on a lathe. Sept. 16th, I was granted a raise to 40 cents per hour, $21.00 per week. I am now working at Van Valkenburg's at toolmaking for 44 cents per hour, $22.00 per week, having started Sept. 30, 1918.

Hoping this will prove satisfactory, I remain,

RALPH CLIFFORD BROUGHAM.
2120 Northampton Street.

Certified by George Rattman, Foreman.

WASHINGTON CORRESPONDENCE

THE GOVERNMENT AND TECHNICAL SHOP EQUIPMENT

CONSIDERABLE interest has been manifested in a bill introduced in the House by Representative Caldwell, of New York, on February 10. The bill provides that the Secretary of War shall lend to trade and technical schools, and other educational institutions in the discretion of the Secretary of War, the machine tools suitable for their use which are owned by the United States and which are not now being used for government purposes.

It has been estimated that there are now in the possession of the government, purchased on account of the war, machine tools to the value of $200,000,000 to $300,000,000, of which amount perhaps one-third may be absorbed by existing arsenals. The remainder, according to the terms of the appropriation bill under which they were bought, must be sold to bring the greatest possible return to the government.

NO MARKET FOR THIS EQUIPMENT

IT IS stated that there is now no ready market for any considerable quantity of these tools, since the machine shops of the country are well stocked because of expansion during the war. The forced sale of so much equipment would probably demoralize the machine tool industry. As an alternative there would be the necessity of storing large quantities of machines, at great expense, and subject to rapid deterioration and depreciation in value.

WANTS TRADE SCHOOLS BENEFITED

ON THE other hand, a prominent member of Congress is reported to have declared that the government can well afford to give this machinery outright to schools that will put it to good use, as it would then go back to the use of the people who have paid for it in the first place.

Precedent for this proposal has been found in the legislation which permits the War Department to lend military equipment to National Guard organizations and other bodies for military training purposes. The material would all be subject to recall in case it were needed in the event of renewed hostilities. The proposed arrangement would not only stimulate the production of larger numbers of skilled mechanics of various kinds, always a national asset, but would provide storage for all these machines at no cost to the government, and would insure its availability when needed.

DIRECTORY OF VOCATIONAL EDUCATION

SOME indication of the development of industrial education in the United States during the past few years may be observed by comparing the "Directory of Vocational Education" issued by the Bureau of Education in 1914 with that issued in 1918. The former is a leaflet consisting of six pages of names and addresses; the latter contains 29 pages and a supplement. Obviously this comparison does not

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give a direct measure of the progress in vocational education, since the published lists of both dates are known to be incomplete. Nevertheless certain facts are quite suggestive.

In 1914 a systematic attempt was made to compile a complete list of "schools in which trades are taught." This designation was used in preference to "trade schools," for the reason that a considerable number of schools which are not properly classed as trade schools maintain departments or classes in which real trade instruction is given. The list as published was accompanied by the following note:

In the above list are included schools offering one or more courses which prepare students for the mechanical trades and industries, by teaching the technic of the occupation in whole or in part, with the expectation that the training given in such course shall serve to shorten the usual period of learning or apprenticeship in the occupation.

The number of schools, listed on the basis of the returns from a widely distributed questionnaire, was 86, located in 19 states.

A similar inquiry made in 1918 resulted in the listing of 285 schools, located in 40 states. Recognizing the difficulty of defining a trade school or a trade class in such terms as will yield figures giving an accurate account of the progress taking place in this important field, the 1918 inquiry was accompanied by the following note:

It is intended to include in this list those schools, public and private, which offer one or more day courses which prepare students, male or female, for the mechanical trades and industries, by teaching the technic of the occupation in whole or in part, with the expectation that the training given in such course shall serve to shorten the usual period of learning or apprenticeship in the occupation.

This expectation should be justified by the provision of conditions which look definitely toward this end, and should include at least the following: (a) The students should spend not less than 10 hours (60 minutes each) per week in the practical shopwork or other technical processes of the occupation; and (b) The instructor should have had practical experience as a wage earner in the occupation for which he is giving instruction.

In 1918 also, for the first time, an attempt was made to compile a complete list of "trade continuation schools." Of these, 144 are listed, located in 29 states. The inquiry was accompanied by the following note:

It is intended to include in this list those schools, public and private, which offer one or more courses, day or evening, for the benefit of students, male or female, who seek, by means of these courses, to prepare themselves for useful employment or for promotion in their present employment, including schools offering cooperative or part-time classes, in which employed persons attend school a certain number of hours per week during working hours, or alternate between school and employment.

The 1918 directory also includes a list of state officials having charge of the administration of vocational education in the several states. The number of persons listed in this section is 157, representing all of the 48 states, as well as the outlying possessions of the United States. With the exception of perhaps a score of positions in six or eight states, this entire official personnel has come into existence during the past four years. The same statement is true also of the official staff of the Federal Board for Vocational Education, now numbering upwards of 500 individuals.

EXAMPLES OF REHABILITATION WORK

THE FEDERAL Board for Vocational Education has recently made public a report of certain features of the work of the Vocational Rehabilitation Division, of which Dr. J. A. Chandler is chief, in which a number of very interesting cases are cited. For example, an infantryman was discharged from the army hospital, having lost his left hand by an

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amputation following a severe wound. He had been a plumber for 16 years before enlisting, but with only one hand he could not hope to return to his old job. After consultation with the Federal Board's experts, he is now in training to be a sanitary inspector, thus utilizing his extensive knowledge of drainage, sewage, and the general layout of plumbing systems.

A discharged sailor who had been a barber for several years, developed trouble with his feet during his service in the navy, which will prevent him from returning to his former occupation. With his knowledge of razors as a basis, he is now being trained to be a razor grinder, a job at which he can work most of the time sitting.

GREAT VARIETY OF CASES

THE FILES of the Board show the great variety of cases which come up for consideration, and often the striking ways in which experience gained in one occupation may be used as a starting-point for gaining the knowledge or skill required in another.

A one-armed man, a former cotton-mill spinner, is being coached to become a time-keeper or foreman. A barber, with part of one arm gone, but still retaining the delicacy and accuracy of touch in the remaining hand, is now learning to be a mechanical draftman. Former auto mechanics are learning autogenous welding. A former carpenter is preparing himself to become a county agent, specializing in farm building construction. A garage attendant, who is now unable to do any heavy work because of heart trouble, is making a special study of dental mechanics. A former lumberjack who has lost both feet is now preparing himself to be a log scaler and inspector. A young, well-educated insurance salesman with some natural aptitude for languages is taking special courses in Polish, Spanish, Russian, and English with the intention of becoming an interpreter. A former coal miner is taking a special one-year course in practical ore assaying.

CLOSING UP THE WORK OF THE VOCATIONAL SECTION, S. A. T. C.

A FEW days ago I called at the office of the Committee on Education and Special Training of the War Department, and found Mr. Randall and Mr. Zweibel, with a reduced force of assistants, hard at work putting the finishing touches on the report of the Vocational Section. Mr. Randall and Mr. Zweibel at that time expected to complete their labors about the first of March, and shortly thereafter the Vocational Section becomes a matter of history.

It is impossible for any one who has seen this work at close range not to be impressed by the significance of the results accomplished. The cause of industrial education has been set forward immensely by the events of the past few months, and it is of the utmost importance that educational theory and practice shall profit by the lessons which have been learned.

Mr. Randall showed me an interesting table prepared for the final report showing the distribution of men from the vocational schools to the various Army Corps. Up to November 13, 1918, 88,972 mechanics were supplied to fourteen different Corps, the largest number, 13,052, going to the Field Artillery. The Infantry got 12,840; Motor Transport, 9,384; and Engineers, 9,110. In addition, 1,144 men were sent to officers' training schools. The number of vocations represented was 71, of which the following were furnished in the largest numbers: auto and motor mechanics, 25,331; carpenters, cabinet makers, woodworkers, 11,911; truck chauffeurs, 10,180; electricians, 5,169; auto drivers, chauffeurs, 4,580; blacksmiths, horseshoers, 4,111.

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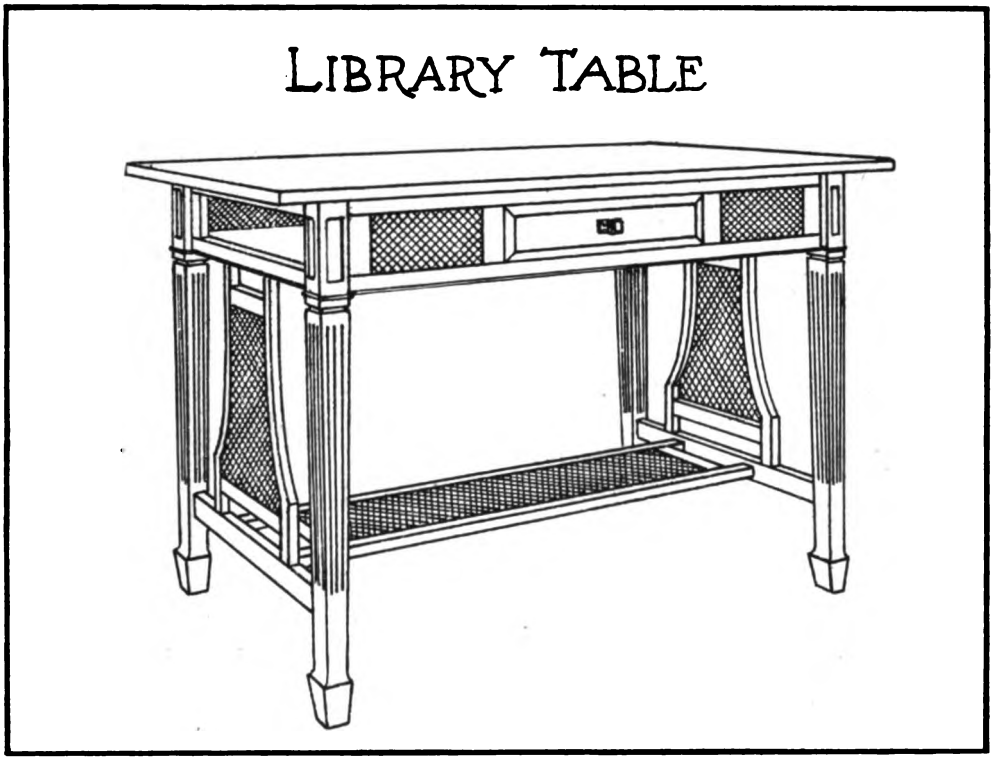
SHOP NOTES AND PROBLEMS

ALBERT F. SEIPERT, EDITOR

LIBRARY TABLE

THE library table shown in the accompanying drawings is presented to illustrate the many possibilities for working old ideas into new combinations which are both pleasing and full of opportunities for serious thought and development on the part of the student.



In many places where design is taught in correlation with the shopwork it is desirable to have him contribute to the designing of the project. He will take a deep interest in the designing because of the personal relation of the finished project to him.

American black walnut is the most suitable wood for making the table shown. It may be filled and given a rubbed varnish finish, or it may be oiled, shellacked, rubbed down, and waxed. The latter finish has a tendency to bring out and preserve the natural beauty of the grain of the wood, and it is easier to obtain good results with this method. The cane should be stained to harmonize with the woodwork, and a very pleasing effect may be obtained if highlights are rubbed in spots. This must be done very delicately, for if the contrast is too great, the desired effect will be destroyed.

A. J. CONRAD,
Honolulu, T. H.

WOOD BASKET.

The wood basket has been made by a number of the boys in the grades during the past two years. The fact that more homes are using wood as fuel than formerly, probably accounts for its popularity. The basket looks well in a brown stain finish and has a rubber tip on the bottom of each post. The main features to be consid-

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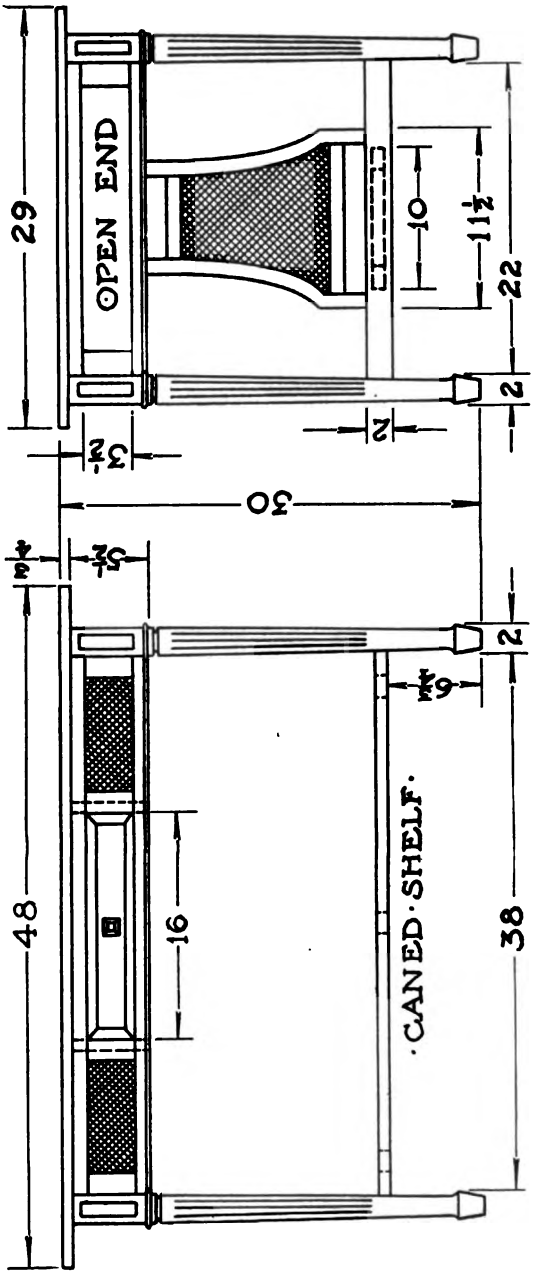
LIBRARY TABLE



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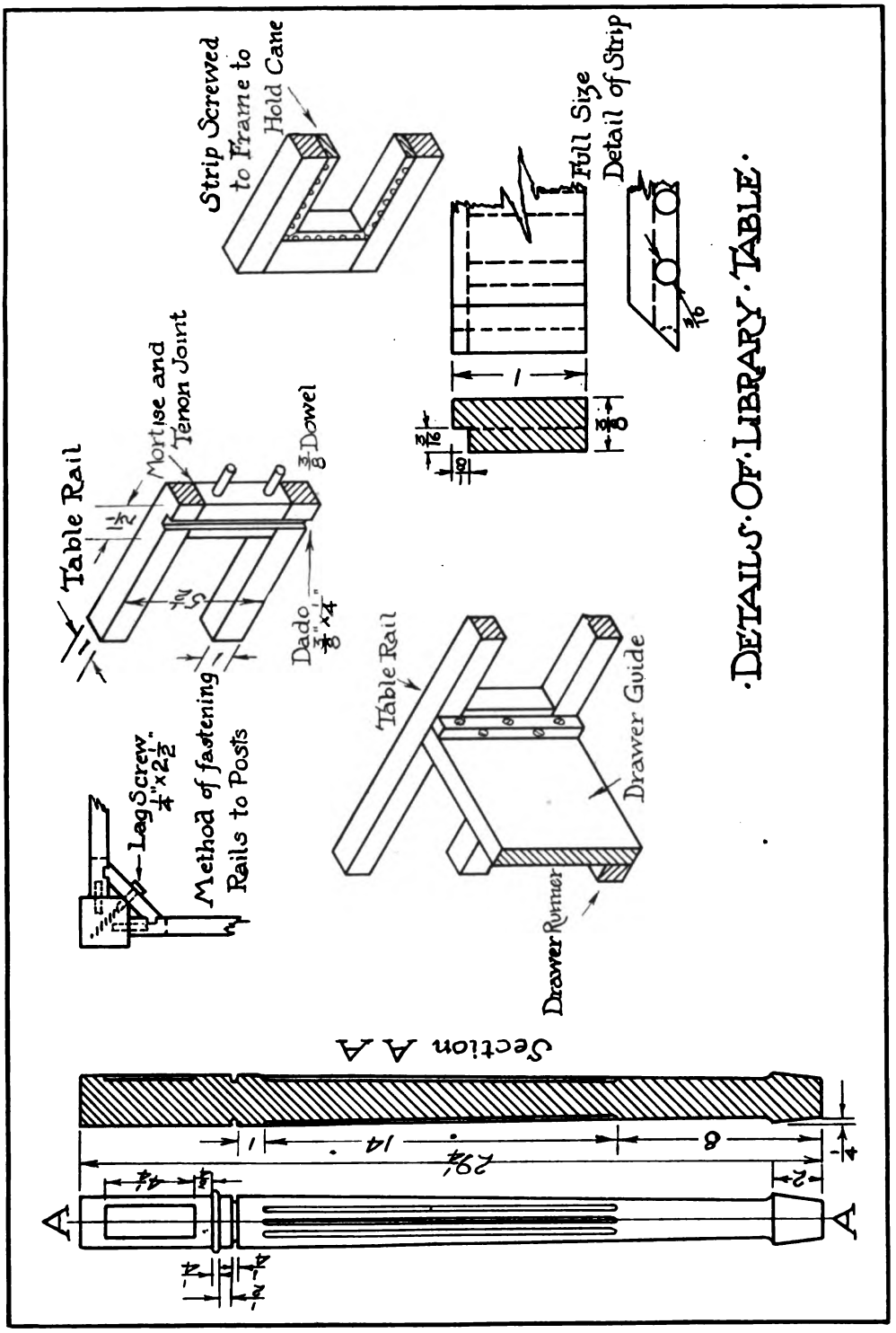

DETAILS OF LIBRARY TABLE

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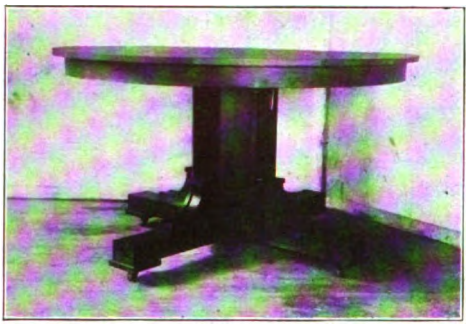
ered are weight, strength and length. As pine is light in weight and fairly strong, the basket can be made thruout with this material, however it will be better to make the posts of maple.

To assemble proceed as follows: screw the sides to the posts with ¾″ or 1″ screws from the inside as shown on the drawing. Next, screw



EXTENSION DINING TABLE

the supporting cleats or cross-rails to the posts with the 2″ round-head screws. Fasten the handle in place in the same manner, being careful not to split the wood. The bottom or floor of the basket is set in position last and should fit fairly snug. Finish in the usual manner.

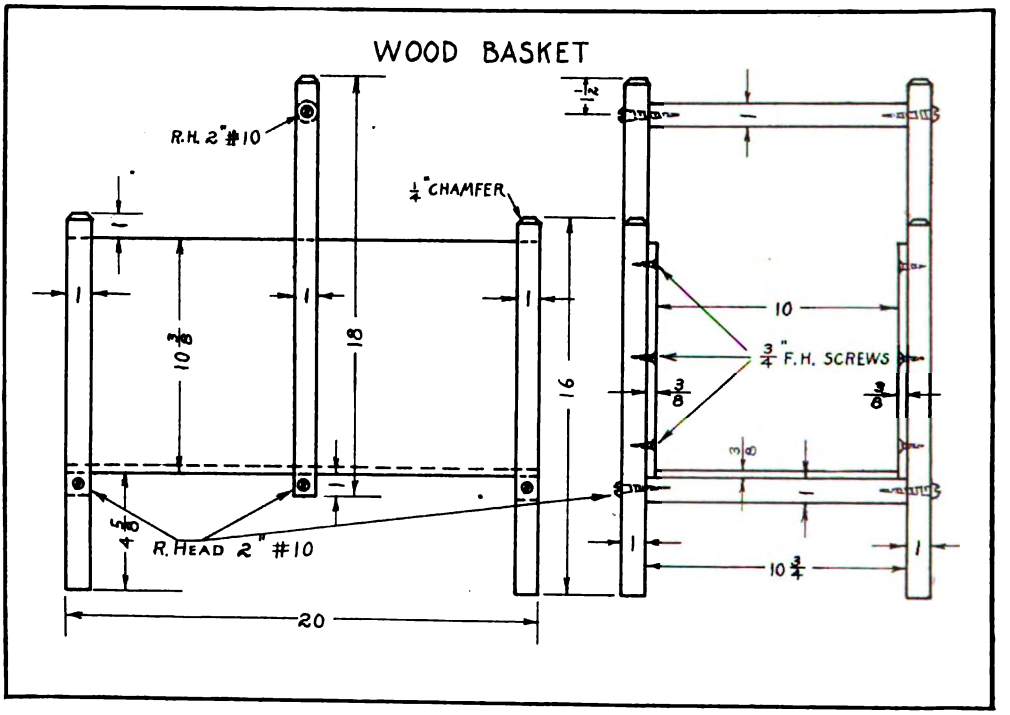
—F. J. BRYANT,
Saco, Maine.

EXTENSION DINING TABLE

The extension dining table shown in the accompanying photograph and drawings was made at Bradley Institute during the summer session. It was made entirely with hand tools. Either quarter-sawed white oak or walnut are satisfactory for its construction. A good finish for white oak is to fume it and then apply a generous coat of hot linseed oil. This should be allowed to soak in for a short time and then be wiped off. A weekly rubbing with a small amount of linseed oil on a cloth will eventually produce a desirable finish, and one that is impervious to water, heat or cold.

The extension device may be constructed according to the details shown, or it may be purchased if that seems preferable.

GEORGE S. SANDERS,
Eureka, Utah.



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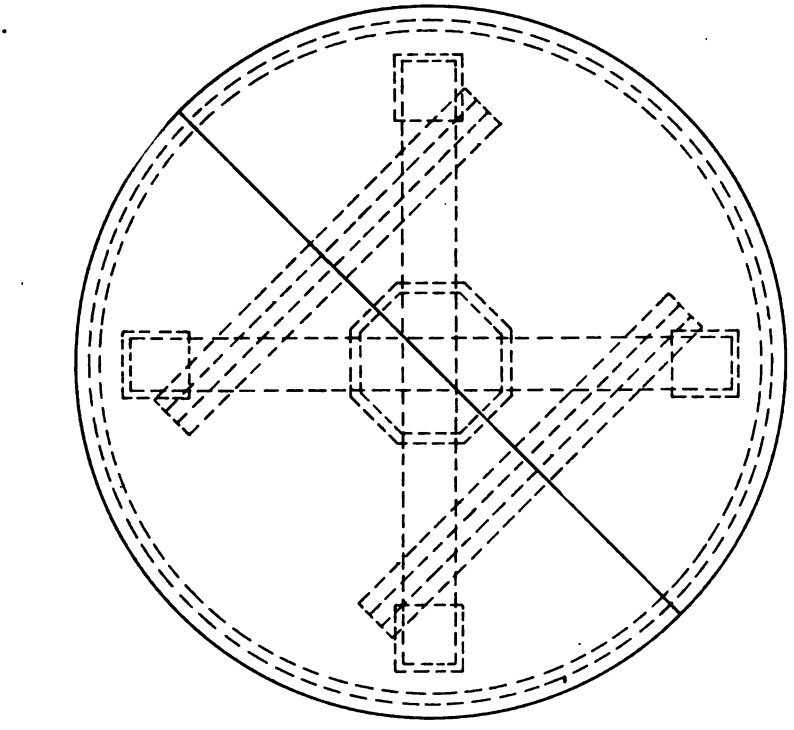
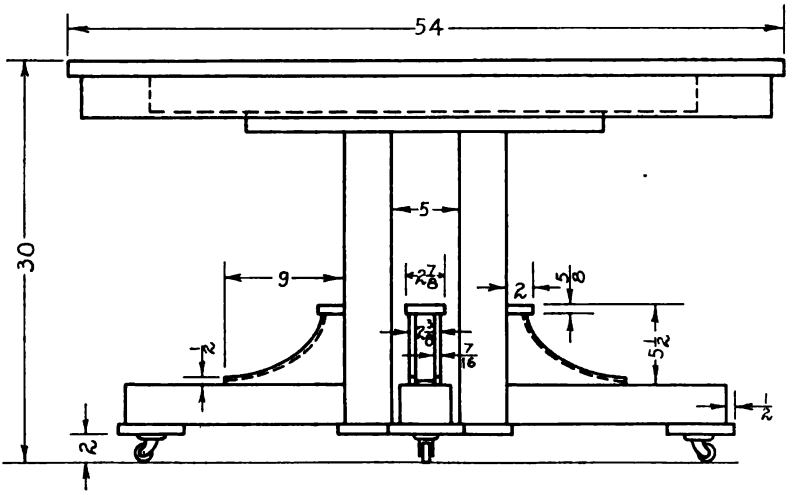
EXTENSION DINING TABLE





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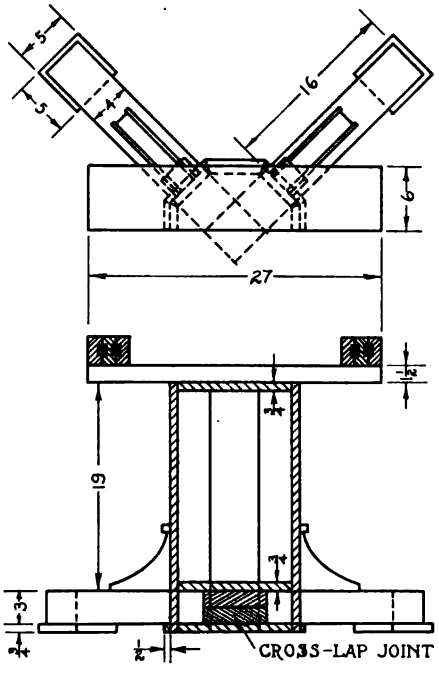
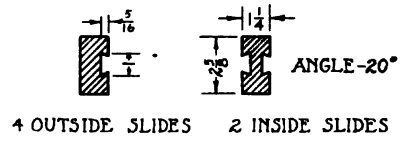
EXTENSION DINING TABLE

DETAILS



VERTICAL SECTION — ON LINE OF TOP DIVISION



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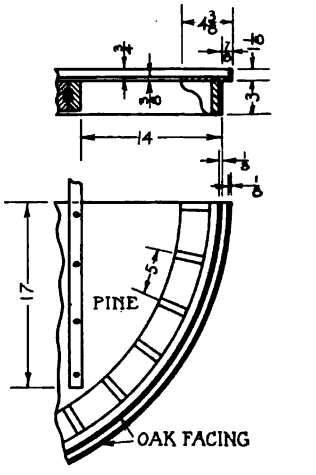
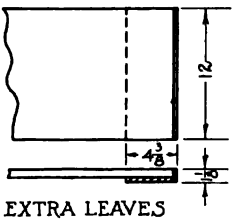


DETAIL OF TOP CONSTRUCTION



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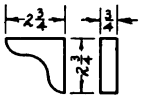
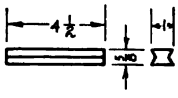
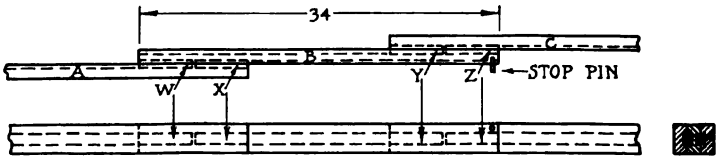


TOP BRACKET (PINE)



8 DOVETAILED SLIDING STRIPS ANGLE 20°



SLIDES EXTENDED — SLIDING STRIPS, W, X, Y, Z, LOCATED

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CURRENT PUBLICATIONS

Undoubtedly the most important book of the month in the industrial education field, and perhaps the most important of the year is *The Instructor, the Man and the Job* by Charles R. Allen, published by J. B. Lippincott Co. Dr. Charles A. Prosser in his introduction to the book says of it, "I am of the opinion that this book is the most important contribution yet made to industrial and trade training. It deals with the most vital of our problems—the proper selection and training of competent instructors—without which government grants and imposing equipment are but 'sounding brass and tinkling cymbals'."

The book treats of methods of organizing subject-matter and of teaching thru productive work. It is the result of experience in supervising vocational school work in Massachusetts and especially of more recent experience as assistant superintendent of training for the Emergency Fleet Corporation. From another viewpoint it may be said that it is Mr. Allen's application of principles of pedagogy learned at Harvard University to the problem of training men in industry to meet the war demand for workers.

The original features of the book, as might be expected, are not the statements of principles, but the details of method growing out of the "four instructional operations," (1) preparation, (2) presentation, (3) application and (4) testing. In this part of the book Mr. Allen has given us a discussion of lesson planning as well as the "steps" in teaching, which is of great value and especially just now when the training of men *for* the industries as well as *in* the industries is just beginning to feel the great impulse of the Smith-Hughes law.

Any one who is training industrial teachers, either for the public schools or for the factories, can hardly afford to wait long before securing a copy of this very timely book.

The price is $1.50.

Course in Wood-Turning. By Archie S. Milton and Otto K. Wohlers. Published by The Bruce Publishing Company, Milwaukee, Wis. Size 9"x 6""; 339 pages; price, $1.50.

The purpose of this book is to give a thoro understanding of the principles of wood-turning. This is accomplished thru the exercises, and problems involving the same principles, which are arranged in sequential order.

The book is intended for high school pupils. The use of tools, and other related matter make it handy for text or reference work. However, the outstanding feature of the book is the large number of plates giving working drawings of exercises and projects. The tool processes are well illustrated with photographic reproductions.

How to Build a Double Neck or Harp-Guitar and Other Musical Instruments. By C. L. Edwards. Published by the Technical Descriptive Company, Waltham, Mass. Price, $1.50.

To the person who is interested in the construction of musical instruments these instruction sheets and blueprints will be of interest. Several pages of these instructions are given to assist in reading the two fullsized blueprints and in constructing the harp-guitar. The whole is bound in paper covers.

Selection of material, directions for gluing, assembly directions step by step and in detail, and ornamentation each receive treatment. By following the numbered directions, and the numbered details of the blueprints the processes of construction assume a logical sequence.

Elementary Machine Shop Practice. By T. J. Palmateer. Published by the author, Stanford University, California. Size 5¼x8⅝ in.; 57 pages; price 75 cents. Twelve or more copies 50 cents each.

This little book is based on a series of exercises designed to give all necessary information and practice in a minimum amount of time. It covers elementary machine shop practice with the exception of the lathe. It is intended for a text.

The author's belief is that the student will acquire skill as his knowledge of different operations increases. He would not have the student spend his time making the first few exercises over and over again even if they were not up to a standard to be held to later. By the end of the course the student should have acquired the necessary skill and much time would be saved.

Elementary Lathe Practice. By T. J. Palmateer. Published by the author, Stanford University, California. Size 5¼ x 8⅝ in.; 29 pages; price, 75 cents, twelve or more copies 50 cents each.

In the booklet are illustrated the various processes of elementary lathe practice, based on a series of exercises. A handy little book for student's use.

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Inventor's Manual. How to Work a Patent to Make it Pay. By George M. Hopkins; revised by A. A. Hopkins, member of American Statistical Association. Published by The Norman W. Henley Publishing Company, New York City. Size, 5x7½ in.; 144 pp.; price, $1.25.

This book is a "guide for inventors in perfecting their inventions, taking out their patents and disposing of them, and cautions as to pitfalls for the unwary." It is based on the experience of a successful inventor covering a quarter of a century. To one desiring to patent the product of his genius, the book offers much wholesome advice.

RECEIVED.

The Educational System of South Dakota. Bulletin, 1918, No. 31. Published by the U. S. Bureau of Education, Washington, D. C. Contains much of interest about the South Dakota schools.

Educational Directory, 1918-19. Bulletin, 1918, No. 36. Published by the U. S. Bureau of Education, Washington, D. C.

Modern Americans, by Chester M. Sanford and Grace A. Owen, of the State Normal University, Normal, Ill. Published by Laurel Book Company, Chicago. A biographical reader for the upper grammar grades. Contains sketches of the lives of eminent Americans whose life-stories appeal to young hero-worshippers.

Monthly Record of Current Educational Publications. Bulletin No. 11, February, 1919. Published by the U. S. Bureau of Education, Washington, D. C.

Educational Survey of Elyria, Ohio. Bulletin, 1918, No. 15. Published by the U. S. Bureau of Education. Contains interesting facts about the manual training and vocational work and the instructors who teach these subjects.

Industrial Education in Wilmington, Delaware. Bulletin, 1918. No. 25. Published by the U. S. Bureau of Education, Washington, D. C. Report of a survey made under the direction of the Commissioner of Education.

Notes for Freshman Drawing. Compiled by Earl R. Gilbert, Technological High School, Atlanta, Georgia. A small pamphlet describing the use and care of drawing instruments; defines working, assembly and detailed drawings; explains terms used, such as sections, dimension lines, etc.

Opportunity Monographs. The Metal Trades. Factory Woodworking Trades. Automobile Maintenance and Service. Forestry Pursuits. The Practice of Medicine as a Vocation. Published by Federal Board for Vocational Education in Vocational Rehabilitation Series. The purpose of these monographs is to aid disabled soldiers, sailors and marines in choosing a vocation.

A Manual of Educational Legislation. Bulletin, 1919, No. 4. Published by Bureau of Education, Washington, D. C. Designed to place in hands of educational committees of 44 State legislatures that convene in 1919 a suggestive program of educational legislation based upon present emergency in our national life.

Ward Occupation in Hospitals. Bulletin No. 25. Re-education Series No. 4. Published by Federal Board for Vocational Education, Washington, D. C. Discusses the theory and proven value of occupational therapy, and methods of practical carrying on of the work.

Opportunities at College for Returning Soldiers. Higher Education Circular, No. 12. Published by Bureau of Education, Washington, D. C., 1918. Information contained was reported to Bureau of Education in December, 1918, in response to request. Over 60% of colleges for men reported. Pamphlet presents the kinds of higher educational opportunities offered by each institution, dates of admission to courses and costs.

Army Occupations as Preparation for Civilian Employment. Opportunity Monograph. Vocational Rehabilitation Series No. 5. Published by Federal Board for Vocational Education, Washington, D. C. Points out way in which returning soldier, more particularly the soldier who has been disabled in the war, may be able to use the experience gained in an army occupation as a help in getting education and placement in suitable employment as civilian.

Cardinal Principles of Secondary Education. Bulletin, 1918, No. 35. Published by Bureau of Education, Washington, D. C. The Commission on the Reorganization of Secondary Education presents the cardinal principles which, in the judgment of its reviewing committee, should guide the reorganization and development of secondary education in the United States.

Rural Teacher Preparation in State Normal Schools. By Ernest Burnham. Bulletin, 1918, No. 27. Published by Bureau of Education. The work of state normal schools in behalf of rural education is brought up to date. An encouraging report.

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FIELD NOTES

(*Continued from p. X.*)

schools, extended a welcome to our Association, referring to it as one of the livest and most promising in the State. Alfred Vivian, dean of the college of agriculture of Ohio State University and president of the State Board of Education, which controls the organization of classes and distribution of reimbursing funds to schools meeting the requirements of the Smith-Hughes law, gave a very interesting account of the development of this work and placed particular emphasis on the organization of part-time classes.

Frank M. Leavitt, associate superintendent of schools of Pittsburgh, Pa., also addressed this meeting. His remarks were reminiscent and reviewed the changes which have taken place in the development of hand work in the public schools, the attitude of educators toward it and its changing and broadening purpose. The meaning back of his keen satire was not lost on the audience which gave him close attention. His topic was, "It will never be *right* until we do it," thereby urging industrial arts teachers to be more aggressive in helping to solve the problems before us.

On Saturday morning Mr. Leavitt again addressed the Association on the topic, "Manual Training in the Public Schools" presenting a more technical analysis of his subject than he had the previous evening. Holding to the same general topic, "It will never be right until we do it" he placed the emphasis first on the word "right," then on "we" and finally on "do", indicating that the time had passed when talk is sufficient and urging that the crying need is for action. Mr. Leavitt spoke favorably of the 6-3-3 division of school periods and urged that each year's work be a direct preparation for life for those who would leave school at its end. He would offer trade work to those who want it and an opportunity for studying general educational subjects for those who elect or are able to remain in school.

Professor Thomas E. French, of Ohio State University, was to have addressed us on the subject, "Mechanical Drawing," but was ill and his place on the program was taken by his assistant, C. L. Svensen. He discussed the results of a questionnaire on mechanical drawing sent to

(*Continued on p. XV.*)

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FIELD NOTES

(*Continued from p. XIV.*)

all the first-grade high schools of the state. Because of his excellent presentation of the subject on such short notice he was given a special vote of thanks. We were informed that this report will soon be published and distributed by the State Board of Education.

W. F. Shaw, director of District 7 of the Federal Board for Vocational Education, was unable to attend but sent a member of his corps, Louis Herbst, to represent him. His talk on "Rehabilitation of the American Soldier and Sailor" was well received.

The Friday afternoon session was given over largely to a discussion led by Clinton S. Van Deusen, of Kent State Normal College, of the recommendations in Secondary School Circular No. 4 issued by the Bureau of Education. He urged that we call upon the Bureau of Education for printed matter outlining opportunities for, and methods of, procedure to be followed in establishing industrial arts classes especially in the smaller cities and towns.

Elmer W. Christy, director of industrial arts, Cincinnati, was elected president, and G. E. McLaughlin, Athens, Ohio, was elected secretary-treasurer for the following year.

After considerable discussion extending back to the meeting last year it was decided to hold our next meeting in Columbus, Ohio, during the Christmas holidays in connection with the Ohio State Teachers Association. Our purpose is to maintain the separate identity of our organization, collect our own dues and provide our own sectional program, but to meet with the larger organization for general meetings.

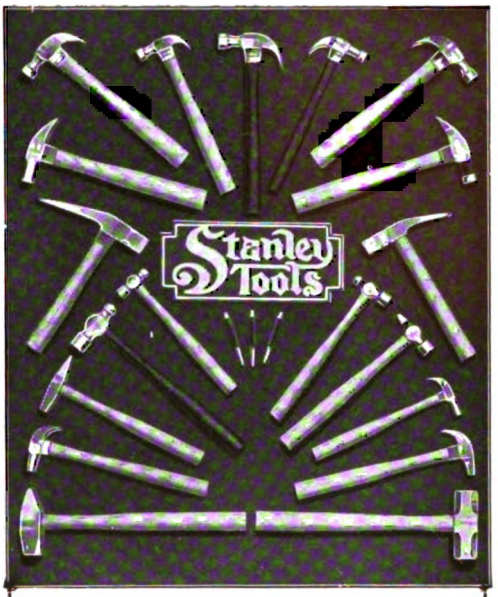
—Elmer W. Christy,
Secretary-Treasurer.

INDUSTRIAL ARTS ROUND TABLE OF CHICAGO AND VICINITY MEETS

The Industrial Arts Round Table of Chicago and Vicinity held its first meeting of the year 1918-19 at Lewis Institute, Chicago, on Friday, February 7.

The topic of the evening as announced was, "The Relation of the Manual Training School and Teacher to Vocational Education." The printed announcement stated: "Brief discussions

(*Continued on p. XVI.*)



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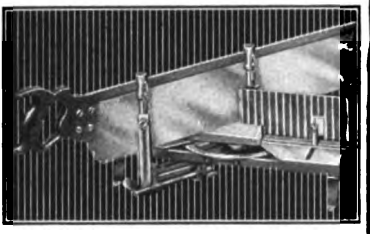

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FIELD NOTES

(*Continued from p. XV.*)

of such questions as the following will be in order:—Is there still a place for the regular manual training school? Should the manual training school concern itself with vocational education? What about the old idea of training mind and hand or mind with hand? Why should the manual training teacher be expected to have a greater interest than the teacher of other subjects, in vocational work?"

A. P. Laughlin, of the Pullman Manual Training School, emphasized the need for greater thought content in the work of the shop. He has found that the pupil properly guided is very much interested in finding out things for himself, when given a wise opportunity. In his own work, Mr. Laughlin finds much time for the study of related work. He suggested that the library be made use of for related subject matter and pictures of processes. For purposes of class instruction and demonstration, we were advised to be widely read on a given topic or subject and then not to tell all but rather direct the reading of the pupil.

It became evident during the discussion of the evening that it was not possible to vocationalize manual training work, especially when the boy receives as low as an hour a week—as Mr. Merriman of Whiting expressed it, the A B C's of the trade.

Charles W. Sylvester told of the rehabilitation work which is being done under the Smith-Hughes Act.

James McKinney, director of Chicago Teacher-Training Center, an institution under the Smith-Hughes Act, spoke of the educational value of manual training. Manual training, he thought, was the means of representing in the schools the arts and industries; that the problem of the manual training teacher was to train in an appreciation of the industries.

Some thought was given during the evening to the relative merits of the teacher-artisan and artisan-teacher. Most of those present seemed agreed that if the work was manual training then the teacher artisan, and if the work was vocational then the artisan-teacher.

L. W. Wahlstrom, also with the Federal Board, pointed out that the manual training teacher ought to study the philosophy of Dr. John Dewey

(*Continued on p. XVII.*)

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FIELD NOTES

(*Continued from p. XVI.*)

and Ruth Mary Weeks. He also emphasized the need of developing the inquiring mind in our pupils.

All persons who were not at this meeting and who wish to attend future meetings will do well to send their names to A. C. Bloodgood, 222 Benton Street, Aurora, Illinois, so that announcements may be sent to them.

—W. L. MATHEWS, Secy.

PROGRAM FOR WESTERN DRAWING AND MANUAL TRAINING ASSOCIATION COMPLETED

The complete program of the coming meeting of the Western Drawing and Manual Training Association to be held May 6-9, is presented herewith. It is indeed rich in content, offering something for every member, no matter what special phase of education he represents. The general sessions are to be held in the Art Institute, which gives added interest to the program. The round table meetings are to be held in the Nicholas Senn High School. The program follows:

General Topic: NEW IDEALS AND RECONSTRUCTION IN EDUCATION

TUESDAY, MAY 6.

3:30 P. M. NICHOLAS SENN HIGH SCHOOL

Manual Training Round Table

Chairman, H. C. Givens, professor of industrial education, University of Arkansas, Fayetteville, Ark.

Experiments with Tests and Standards in Manual Arts; Albert F. Siepert, head of teachers' training course in manual arts, Bradley Polytechnic Institute, Peoria, Illinois. (20 minutes)

Discussion.

Need and Method of Teaching Freehand Drawing in Vocational Education; William H. Varnum, assistant professor of drawing and design, University of Wisconsin, Madison, Wis. (20 minutes)

Discussion.

3:30 P. M. NICHOLAS SENN HIGH SCHOOL

Household Arts Round Table

Chairman, Emma Conley, director of home economics courses, Extension Division, University of Wisconsin, Madison, Wis.

(*Continued on p. XVIII.*)

The Boy on the Fence

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The boy in grades 7-8-9—and in these grades he should receive training that will help him decide what he wants to be and enable him to specialize in advanced school work for the vocation he selects.

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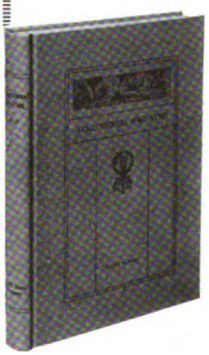
Vocational Printing

This new text by Ralph W. Polk, Director Vocational Instruction, St. Joseph, Mo., presents printing on a purely educational basis—the only method by which printing may be successfully taught in the schools. Mr. Polk is a printer, as well as a teacher, and his book was prepared with proper balance of theory and practice, and with the sole purpose of laying a foundation for the printing profession. It is a text for the regular day schools, all-day or part-time vocational schools, continuation schools, and apprentice training. Write for a copy—compare it with your present course. It's a good text.



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FIELD NOTES

(*Continued from p. XVII.*)

Furnishing a Small Home; Evelyn Jensen, Extension Division, University of Wisconsin, Madison, Wis. (20 minutes)

Vocational Education; Anna Richardson, acting assistant director for home economics education, Federal Board for Vocational Education, Washington, D. C. (20 minutes)

The Home Economics Teacher as a Factor in Child Health Organization, New York City. (20 minutes)

Discussion

8:00 P. M. FULLERTON HALL, ART INSTITUTE

General Session.

Music.

Invocation

Addresses of Welcome

Response and Key to Program, by the President, Ira S. Griffith, professor of industrial education, University of Missouri, Columbia, Mo.

Address: William B. Owen, president, Chicago Normal College.

WEDNESDAY, MAY 7

9:00 A. M. FULLERTON HALL, ART INSTITUTE

Art Round Table

Chairman, Miss Nama A. Lathe, department of fine arts, School of Education, University of Chicago.

Specifications for the "New-Building" Demanded by the New Times.

Discussion.

Suggestions from Master Workmen—Ways and Means in Art Teaching to Meet these Specifications.

Discussion.

Arrangements are being made to have a number of "master workmen" who will each bring one definite suggestion of proved value, and tell the material, the method, and the specific objective accomplished.

11:00 A. M. FULLERTON HALL, ART INSTITUTE

General Session

Election of Nominating Committee.

Appointment of Committee on Resolutions and Place of Meeting.

General Topic: RECONSTRUCTION IN THE FINE AND MANUAL ARTS IN SECONDARY SCHOOLS

Address: A Basis for Reconstruction of the Curriculum; Dr. John Franklin Bobbitt, professor

(*Continued on p. XIX.*)

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FIELD NOTES

(*Continued from p. XVIII.*)

of school administration, School of Education, University of Chicago. (35 minutes)

Address: Some New Ideals Suggested by the Experience of the Vocational Units of the Students' Army Training Corps; Robert W. Selvidge, professor of industrial education, Peabody College for Teachers, Nashville, Tenn. (35 minutes)

Address: Some New Ideals in Art Teaching Suggested by the War; Henry Turner Bailey, dean, Cleveland School of Art, Cleveland, Ohio. (35 minutes)

3:30 P. M. PLACE TO BE ANNOUNCED.

Printing Round Table

Chairman: Leonard W. Wahlstrom, vocational advisor, Vocational Rehabilitation Division, Federal Board for Vocational Education, 330 Webster Street, Chicago, Ill.

Topics and speakers to be announced.

6:30 P. M. PLACE TO BE ANNOUNCED.

Annual Dinner

Toastmaster, William J. Bogan, principal, Lane Technical High School, Chicago.

THURSDAY, MAY 8.

9:30 A. M. FULLERTON HALL, ART INSTITUTE

General Session

Music

General Topic: Art in Industry—Wanted: A National Policy.

Address: A National University of the Arts; Emma M. Church, president, Church School of Art, Chicago. (35 minutes)

Address: A Plan for a National School of Industrial Art; Charles A. Bennett, dean of technology, Bradley Polytechnic Institute, Peoria, Ill. (35 minutes)

Address: State Schools of Industrial Art in Relation to a National Program; Dr. Charles A. Prosser, Director, Federal Board for Vocational Education, Washington, D. C. (35 minutes)

Address, Lionel Robertson, Art Alliance of America, Chicago, Ill. (35 minutes)

1:00 P. M. PLACE TO BE ANNOUNCED.

Educational Luncheon

The officers of the Western Drawing and Manual Training Association have accepted the invitation of the Art Alliance to hold a joint educational luncheon. Detailed announcement as to

(*Continued on p. XX.*)

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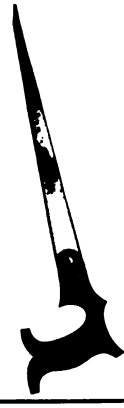
5 Factories 11 Branches



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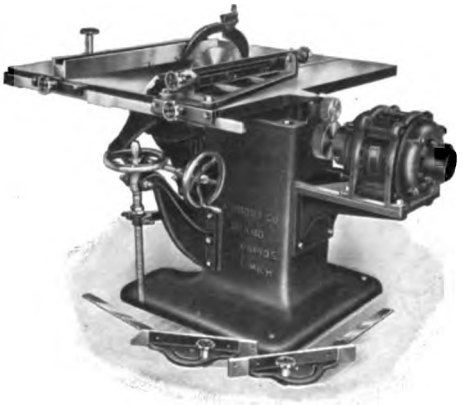
SAW TABLES
For MANUAL TRAINING



This cut shows our motor driven spiral gear saw table. No countershaft, no belts. Tilting or stationary tops. Write for circular and prices on our entire line. Address

ALEXANDER DODDS CO.
451-453 Monroe Ave., N.W.
GRAND RAPIDS, MICHIGAN, U. S. A.

For the School Shop

We specialize on small tools for all trades and being close to the manufacturing centers are in a position to give prompt service in the most favorably known lines.

Disston and Simonds Saws.

Stanley Planes, rules, gauges, squares, screw drivers, etc.

Millers Falls Mitre Boxes, Bit Braces and hand drills.

Buck Brothers and Witherby chisels and gouges.

Brown & Sharpe and L. S. Starrett machinist tools.

Rose tools for copper work and a complete line of tools for Jewelers and Engravers.

Send for our catalogue and allow us to quote on your requirements.

Belcher & Loomis Hardware Co.
Providence, - - Rhode Island

FIELD NOTES

(*Continued from p. XIX.*)

time, place, and reservations will be issued later.

8:00 P. M. FULLERTON HALL, ART INSTITUTE

General Session

Music

Address: Topic and speaker to be selected.

9:15 P. M. ART INSTITUTE

Reception

The members of the Western Drawing and Manual Training Association will be the guests of the Trustees of the Art Institute and the Board of Education.

FRIDAY, MAY 9

9:00 A. M. FULLERTON HALL, ART INSTITUTE

General Session

Music

Address: Topic and speaker to be selected.

Address: Topic and speaker to be selected.

11:00 A. M. FULLERTON HALL.

Annual Business Meeting

2:00 P. M. PLACE TO BE ANNOUNCED.

Vocational Education Round Table

Chairman, Hans W. Schmidt, director of industrial education, State Normal School, Oshkosh, Wis.

Our Common Schools and Vocational Education; John Callahan, secretary, State Board of Industrial Education, Madison, Wis. (20 minutes)

Discussion

Some Essentials of Trade Teacher Training; James McKinney, University of Illinois. (20 minutes)

Discussion

Vocational Education versus Vocational Training; Emory T. Filbey, School of Education, University of Chicago. (20 minutes)

Discussion.

The following constitutes the list of officers and members-elect of the executive committee of the National Society for Vocational Education for the ensuing year:

President, David Snedden, Teachers College, Columbia University, New York City.

Vice-Presidents: H. L. Kent, state director agricultural education, Topeka, Kansas; W. E. Bartholemew, specialist in charge of commercial education, New York State Education Depart-

(*Continued on p. XXI.*)

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FIELD NOTES

(*Continued from p. XX.*)

ment, Albany, N. Y.; Lewis Gustafson, superintendent of David Ranken Jr., School of Mechanical Trades, St. Louis, Mo.; Isabel Ely Lord, Pratt Institute, Brooklyn, N. Y.

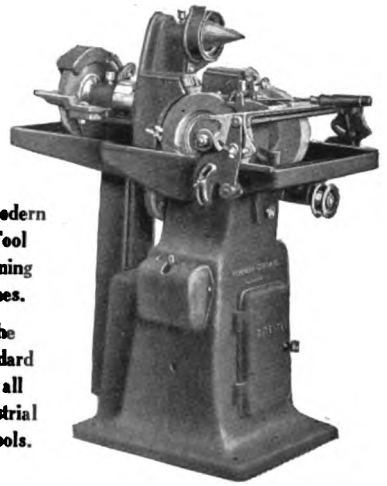
Executive Committee: Hugh Frayne, American Federation of Labor, 2 East 23d Street, New York City; George A. Works, Cornell University, Ithaca, N. Y.; E. E. MacNary, Emergency Fleet Corporation, Medical Building, Philadelphia, Pa.; C. R. Richards, director Cooper Union, New York City; Mrs. Lucinda W. Prince, Prince School of Salesmanship, Boston, Mass.; Percy S. Straus, c/o R. H. Macy & Co., New York City; F. B. Pratt, Pratt Institute, Brooklyn, N. Y.; Lewis A. Wilson, New York State Department of Education, Albany, N. Y.; Clarence J. Hicks, 26 Broadway, New York City.

Under the supervision of the Chicago board of education, Swift & Company are conducting a continuation school for office boys. The board furnishes two experienced men teachers and the company furnishes all supplies and equipment. About 300 pupils receive one hour of instruction daily. The subjects include penmanship, arithmetic and English. In addition, frequent lectures are given by experts in their line, on departmental activities. These are followed up by class work and reading assignments in the Company library. Another course that is growing constantly is the instruction in applied business correspondence which is being given during the noon hour to both dictators and stenographers.

A meeting of the Executive Committee of the central section, International Association of Teachers of Printing, was held in St. Louis on February 23 in connection with the meeting of the National Society for Vocational Education. It was decided to hold the next convention of the Association in Chicago, June 16 and 17. At that meeting an agitation will be started for the teaching of English to foreigners by means of the type case and the printing press in place of the method now in use. Earnest Reeves, of the Central High School, St. Louis, is president, and Ralph W. Polk, St. Joseph, Mo., secretary.

(*Continued on p. XXII.*)

Mummert - Dixon Oilstone Grinders



The Modern Edge Tool Sharpening Machines.

The Standard for all Industrial Schools.

No. 481—Motor or Countershaft Drive
An automatic attachment for grinding long knives can be furnished with this machine.

THE FIVE LEADING FEATURES:

1 Coarse Oilstone Wheel, 3 Grinding Cone,
2 Fine Oilstone Wheel, 4 Leather Wheel,
5 Emery Wheel. All at your finger's ends.

Send for full descriptive bulletin.

MUMMERT-DIXON CO., Hanover, Pa.

V. & B. TOOLS

A Complete Line of

Hammers - Anvil Tools - Tongs

NAIL HAMMER

Every V. & B. Tool is individually tempered and tested.

Write for complete catalogue and Blue Print circular of hammers.

Vaughan & Bushnell Mfg. Co.
Makers of Fine Tools
CHICAGO

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VENUS PENCILS

17 Black degrees and 3 Copying

The largest selling quality pencil in the world

VENUS Pencils are recognized everywhere as the one pencil perfect for any purpose.

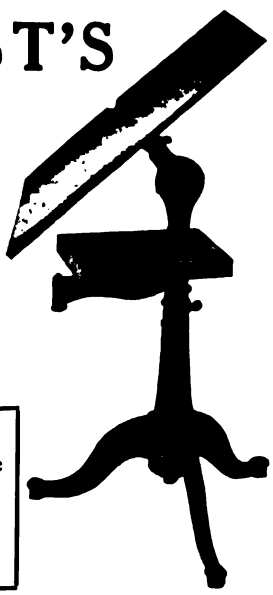
In classroom or drafting room their uniform superb quality makes the work easier, better and quicker for both instructor and pupils.

AMERICAN LEAD PENCIL CO.
219 Fifth Ave., Dept. A., New York
and Clapton, London, Eng.

POST'S

STUDIO DRAWING STAND
of Par Excellence

The top can be rotated in a complete circle while set at any angle.



Also we can recommend the **Polytechnic Illustrator Victor Stands**

THE FREDERICK POST CO.
Manufacturers - Chicago
San Francisco Cal. Portland Ore.

FIELD NOTES

(*Continued from p. XXI.*)

Under the direction of the United States Bureau of Education, conferences of mine owners, managers and operators, school men and community workers have been held during the past few months in Pittsburg, Pa., and Baltimore, Md. The purpose was to bring about a cooperation between school men and mine operators. At each conference the subject of cooperative part-time work was discussed. The programs were well in line with the purposes of the meeting for improving educational conditions in mining towns.

Dr. William M. Jardine, for the past ten years dean of agriculture and director of the agricultural station at the Kansas State Agricultural College, has been elected president of the institution. In his inaugural address on February 4 Dr. Jardine laid down a program embodying a combination of industrial and liberal training as the most important step in future education.

The University of Missouri in conjunction with the Federal Board for Vocational Education is engaged in training, in evening schools, mechanics who have mastered their trade and who wish to become teachers of that trade to apprentices. At the present time 52 men are taking the course, with a regular attendance of 93%. Professor Ira S. Griffith is directing the work.

The many friends of Professor Ira S. Griffith will be interested to know that the question as to which state university will claim his services next year has been settled. He has accepted the position of head of the new department of industrial education at the University of Illinois, which carries with it the title of Professor of Industrial Education. His friends will welcome him back to the scenes of his former activities.

U. Roy Sewrey, director of continuation school in Rockford, Ill., has accepted a position with the Western Clock Co. of La Salle, Ill., manufacturers of the "Big Ben" and other alarm clocks and watches. He is to outline courses of instruction and take complete charge of their ap-

(*Continued on p. XXIV.*)

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THE STOUT INSTITUTE

SUMMER SESSION

July 28—August 29, 1919

A special feature of the summer session will be the courses for directors and teachers of vocational schools receiving state and federal aid.

Vocational Education - - -	**4 professional courses**
	15 shop courses

The following groups of courses are also offered:

Industrial Arts - - - -	**22 courses**
Household Arts - - - -	**15 courses**
Third and Fourth Year's Work	**7 courses**
Physical Training - - - -	**3 courses**

These courses are offered for supervisors and teachers of Industrial Arts and of Household Arts; for dietitians, and for managers of cafeterias, lunch rooms, and institutional housekeeping; for students, or teachers wishing to take advanced work for the B. S. degree in Industrial Arts or Household Arts; for athletic coaches and others interested in athletic games and swimming. Credit on two year diploma courses or four year degree courses given for summer session work.

Announcement ready April 15. Catalog for regular annual session ready now. For either, address

L. D. HARVEY, President
STOUT INSTITUTE
Menomonie, Wisconsin

ART SCHOOL

ART INSTITUTE
OF CHICAGO

SUMMER SESSION

JUNE 30 TO
SEPTEMBER 20

ALL ART COURSES
INCLUDING
OUT-OF-DOOR WORK

For Illustrated Catalogue address
Registrar, Art Institute of Chicago
Art School, Dept. M.T.
Michigan Ave. at Adams St.
Chicago

SUPERVISORS and TEACHERS

interested in Vocational Education, Automobile Repair, Carpentry, Design, Drafting, Electric Wiring, Forging, Machine Shop, Millwork, Sheetmetal Work, and Woodworking as well as college courses in Domestic Science, Education, English, History, Mathematics and Science.

ATTEND THE

SUMMER SESSION

June 23 to July 26

All courses receive full credit which may be applied towards diplomas or the B. S. Degree.

Last year this school trained nearly 1750 men in mechanical trades for the army at the request of the War Department.

The same buildings, equipment and expert teachers are now available for your use.

Write for Bulletin to
Supt. Summer Session

Bradley Polytechnic Institute
PEORIA, ILLINOIS

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More than ever before, the manual training courses of schools and colleges are teaching modern mechanics. The well-trained mechanics must know how to weld metalssuccessfully, therefore every manual training department should be given the best equipment possible—

Imperial Welding and Cutting Equipment

Economical, Efficient, Safe, Speedy and Durable. Portable and always ready for use. Welds anything in metal and cuts everything in wrought iron and steel.

Free Copy of the Imperial Hand Book containing complete data as to cost of operation and views of work, will be sent Manual Training Instructors on request.

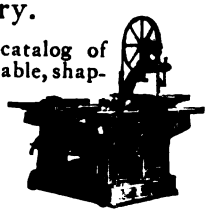
Imperial Brass Manufacturing Co.

511 S. Racine Ave., Chicago

Crescent Wood Working Machines

are the tools your students will eventually use so give them the opportunity now of learning about this splendid line of wood working machinery.

Send today for our catalog of band saws, jointers, saw table, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinders, borers, hollow chisel mortisers, Universal wood workers.



The Crescent Machine Co.

46 CHERRY ST. LEETONIA, OHIO

FIELD NOTES

(*Continued from p. XXII.*)

prenticeship school. His work with that company will begin in June. Mr. Sewrey was selected from more than twenty applicants for this position.

The tenth annual convention of the American Federation of Arts will be held in New York City, at the Metropolitan Museum of Art, on May 15th, 16th and 17th. Among the topics for discussion are "War Memorials", "Art and Labor" and "Art and the Nation".

The annual meeting of the National Vocational Guidance Association was held in St. Louis, February 19, just preceding the meeting of the National Society for Vocational Education. The program was rich in content and the speakers were authorities in the field.

The Eastern Arts Association has sent out a questionnaire to members concerning the war work which each has done. The results will be published in their proceedings and thus remain a permanent record.

In spite of the drain upon the man power of Wisconsin to meet the war emergency, it is gratifying to find that while Berlin, Green Bay, Hayward, Ladysmith, and Viroqua have been obliged for the present to discontinue their courses in manual training for the grades, Cudahy, De Pere, Horicon, Onalaska, and Prairie Du Chien added manual training to their grade work.

Charles Marten, formerly at the Schwab Manual Training School, Homestead, Pa., has been appointed associate professor of industrial education at the Agricultural and Mechanical College, College Station, Texas.

"Safety First" Electric Glue Pot

This is the Glue Pot for Manual Training Shops. Handy when steam cannot be had in Spring or Fall and Safer than the Old Gasoline or Oil Stove. Made for any voltage up to 220. One qt. size with attachment plugs, $5.00. Sold by P. M. Spink, 761, 4th Ave., Faribault, Minn.

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Kewaunee Bulletin Board at a Bargain

WE illustrate a new **Kewaunee Bulletin Board** that we are able to offer at a very close price, owing to an advantageous purchase of pressed cork, which material is used for the backs of these Boards.

This is an opportunity to secure a cork-back Board for just about what a wood-back Board would cost.

Made in 3 designs:
3 ft. high, 3½ ft. wide, with glass doors.
Same size without doors.
2½ ft. high, 2 ft. wide, without doors.

WRITE FOR COMPLETE INFORMATION.

New York Office, **Kewaunee Mfg. Co.** LABORATORY FURNITURE EXPERTS 70 Fifth Avenue

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TOOLS AND BENCHES

FOR VOCATIONAL & INDUSTRIAL EDUCATION

For over 30 years we have studied this line and we are exceedingly proud of the reputation gained and which is based entirely on quality and service. Can't we estimate on your next list?

Just issued—a little catalogue of 31 pages entitled "TOOL OUTFITS AND BENCHES FOR HOME AND SCHOOL USE." If interested please mention Catalog No. 191.

HAMMACHER SCHLEMMER & CO.

NEW YORK, Since 1848 **4th Ave. & 13th St.**

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Reconstruction work will no doubt be reflected in the courses given in the summer schools attend, the following data concerning courses in the leading institutions offering shopwork, have upon application to the director of the summer session of any of the following:

NUMBER OF COURSES IN EACH SUB

SUBJECTS TO BE TAUGHT IN THE YEAR 1919	Armour Institute of Technology Chicago, Illinois	Bradley Polytechnic Institute Peoria, Illinois	College of Industrial Arts Denton, Texas	Geo. Peabody College for Teachers Nashville, Tennessee	Illinois State Normal University Normal, Illinois	Indiana State Normal Terre Haute, Indiana	Iowa State Teachers College Cedar Falls, Iowa	Kansas State Agricultural College Manhattan, Kansas
Methods of Teaching the Manual Arts	...	1	...	1	...	1	1	3
Organization of the Manual Arts	...	...	...	1	1	1	...	1
History of the Manual Arts	...	...	...	...	...	...	...	...
Industrial Education	...	...	...	1	...	...	...	1
Vocational Guidance	...	1	...	1	...	...	...	...
Physics	4	...	...	...	...	...	...	...
Chemistry	7	...	...	...	...	...	...	...
Mathematics	8	...	...	...	...	...	...	...
Civil Engineering	6	...	...	...	...	...	...	...
Woodworking (Mostly Benchwork)	2	3	1	3	2	2	4	1
Woodworking (" Machine Work)	1	2	...	1	...	1	...	1
Carpentry	...	1	...	...	...	1	...	...
Wood Veneering & Inlaying	...	...	...	...	...	...	...	...
Cabinet Making	...	...	...	...	...	...	...	...
Pattern "	...	...	...	...	...	...	...	...
Wood Turning	...	...	...	...	...	...	...	...
Metalwork (cold) (Mostly Benchwork)	...	...	...	...	...	...	1	...
Sheet Metal Work	...	2	...	...	...	1	2	...
Art Metalwork and Jewelry Making	...	...	...	...	1	...	...	...
Hammered Metalwork	...	...	...	...	...	...	...	...
Forging	1	1	...	...	...	1	...	3
Foundry	1	...	...	...	...	1	...	..
Plumbing	...	...	...	...	...	...	...	...
Electrical Construction	2	...	...	...	...	...	...	...
Steam and Gas	...	...	...	...	...	...	...	...
Auto Mechanics	...	1	...	...	...	...	...	...
Machine Tool Work	1	1	...	...	...	3	1	3
Saw Filing & Tool Sharpening	...	...	...	...	...	...	...	...
Printing	...	...	...	...	...	...	...	...
Bookbinding	...	...	...	...	1	...	...	...
Elementary Handwork	...	...	1	2	1	1	...	...
Elementary Supervision Handwork	...	...	...	...	...	...	...	...
Craft Work	...	...	...	...	...	...	...	...
Basketry	...	...	1	...	...	...	...	...
Pottery	...	...	...	...	1	...	...	...
Clay Modelling	...	...	...	...	...	...	...	...
Leather Tooling	...	...	...	...	...	...	...	...
Harness Making	...	...	...	...	...	...	...	...
Mechanical Drawing	2	2	2	1	2	2	3	3
Architectural Drawing	5	3	...	1	...	...	...	...
Machine Drawing	2	2	...	1	1	2	...	...
Public School Drawing	...	...	...	...	...	...	...	...
Freehand Drawing	...	1	4	6	4	1	2	...
Charcoal Drawing	...	...	...	...	...	...	...	...
Blackboard Sketching	...	...	...	...	...	...	...	...
Lead Pencil Sketching	...	...	...	...	...	...	...	...
Interior Decoration	...	...	2	...	...	...	...	...
Decorative Design	...	2	5	2	2	...	2	...
Woodwork Design	...	...	...	...	...	...	...	...
Poster Design	...	...	...	...	...	...	...	...
Applied Design	...	...	...	...	...	...	...	...

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this year. In order to assist the readers of this Magazine in choosing the school which they will been gathered. Courses in the various crafts are also listed. Detailed information will be sent

JECT TO BE GIVEN IN EACH SCHOOL

Kent State Normal College Kent, Ohio	Miami University Oxford, Ohio	Northern Ill. State Normal School De Kalb, Illinois	Ohio State University Columbus, Ohio	Oregon Agricultural College Corvallis, Oregon	State Manual Training Normal Pittsburgh, Kansas	State Normal School Santa Barbara, California	State Normal School Warrensburg, Missouri	State Normal School Oshkosh, Wisconsin	Teachers College, Columbia University New York City	University of Chicago, School of Edu. Chicago, Illinois	University of Missouri Columbia, Missouri	University of Pittsburgh Pittsburgh, Pennsylvania	University of Washington Seattle, Washington	University of Wisconsin Madison, Wisconsin	Western State Normal College Kalamazoo, Michigan
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2	1	...	...	1	1	1	3	1	2	6	1	...	1	1	1
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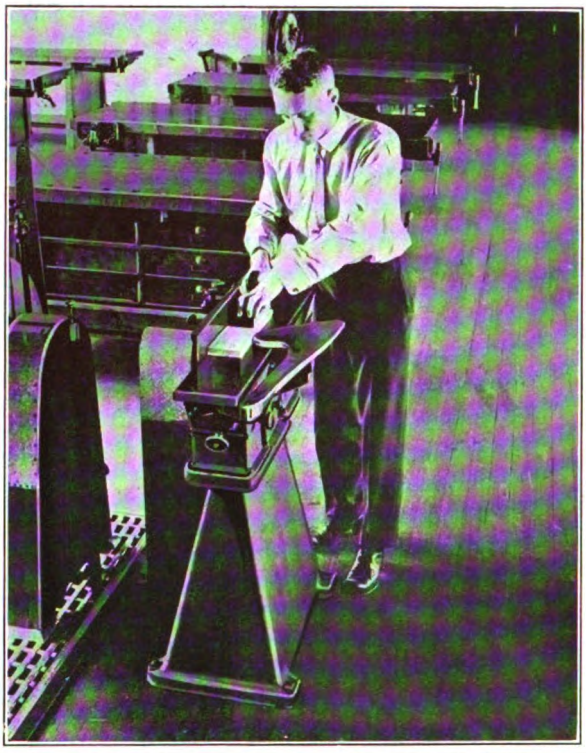

This "Oliver" No. 144 6-inch Jointer

installed in the wood-shops of the University of Illinois will straighten up and plane more in two minutes than you can by hand in two hours. It does it better too.

This is true of over 300 **"Oliver" Jointers** in School Shops.

Pattern Shop Equipment
Woodworking Machinery
Machine Tools
of
QUALITY

Manufactured by
OLIVER MACHINERY CO.
Grand Rapids, Mich., U.S.A.

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DRILL CHUCKS
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In Stock for Immediate Delivery

"STANDARD"

"NEW MODEL"

"GEARED PATTERN"

We would be pleased to send a copy of our NEW CATALOG No. 30 describing these chucks, and other chucks of our manufacture.

Every Vocational School Instructor should have a copy of this useful book on file.

"POSITIVE DRIVE"

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TRADE NOTES

The John Steptoe Co., 2961 Colerain Avenue, Cincinnati, Ohio, has organized an industrial education department which will be conducted in accordance with the policies that have characterized this firm throughout the seventy-four years of their existence. They have recently issued a 32-page booklet, fully illustrated, showing operations in their shop on Steptoe Shapers and milling machines. The booklet is of special interest to teachers of shop work and a copy will be sent to readers of this Magazine, if request is sent to the "Industrial Education Department." This firm is also distributing gratis large framed photographs of equipment suitable for hanging on the walls of a machine shop.

Joseph Dixon Crucible Co., Jersey City, N. J., have just issued a new school catalog, covering pencils, erasers, crayons and penholders. It is a beautiful piece of printing and shows their school line in the actual sizes and colors. This firm has maintained a school department for more than a quarter of a century. Copies of the new catalog will be sent to those interested.

Shop teachers will be much interested in the advertisement of the "Safety First" Electric Glue Pot on p. XXIV. An electric glue pot that meets shop requirements and can be sold for $5 will certainly find a ready sale. For details write to P. M. Spink, 761 Fourth Avenue, Faribault, Minn.

Shop teachers in need of a Bulletin Board will do well to read the Kewaunee Mfg. Co. advertisement on p. XXV. They are making an advantageous offer on cork-back Boards.

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10, 13, 15 in. swing
Any type. Write for Catalogue
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Sebastian Lathe Co.
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Manufacturers of
MACHINERY FOR WORKING SHEET METALS

The New National Anthem

"America, My Country," born in Congress on day our war was declared; helped to bring on the war; sustained our spirit for victory during the war; will help to prevent future wars. Greatest poem and song in class only with the Marseillaise Hymn. Schools of several states have adopted it. Sung from coast to coast and in France.

Educators may have octavo sample school arrangements for two 3-cent stamps.

Published in every vocal and instrumental arrangement. Let every boy and girl learn this great masterpiece for daily use and for patriotic occasions.

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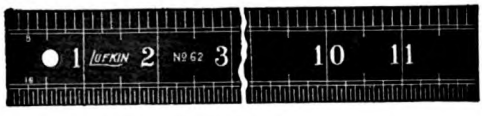

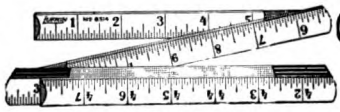

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Our Booklet contains interesting chapters on Peace salaries, Prospects, especially for teachers of Manual Training, Industrial Arts, etc. . . Sent FREE.

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Our schools are to play a more vital part in the teaching of the principles of democracy than ever before. Industrial education ranks high as a means for the Americanization of our foreign population.
The call for **Manual Training Men** is unusual and we hope for a response to this call to service. The great North West pays the best salaries.
WRITE US FOR FREE BOOKLET AT ONCE
MINNEAPOLIS TEACHERS AGENCY - - MINNEAPOLIS, MINNESOTA

WANTED- Copies of November 1918 and January 1919 issues of Manual Training Magazine. We will send you 25 cents on receipt of copies in good condition. **Must be mailed flat.**
THE MANUAL ARTS PRESS - - - - - PEORIA, ILLINOIS

LAST summer, America expected a long war. She prepared for it, and prepared so tremendously that the knowledge of what America was doing broke the spirit of the German resistance.

The war collapsed.

But those preparations must be paid for. Such a sudden victory is expensive in money, *but a slower victory would have cost the lives of thousands more of America's boys,* and even more treasure.

Americans will show their gratitude by helping to pay for those preparations.

The money for the Victory Liberty Loan will pay the bills.

How much will you subscribe?

Subscribe to the
Victory Liberty Loan

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BOOK NOTES

TEACHERS have been gradually bringing into their furniture construction course styles of furniture involving more or less upholstery. This presented a problem, which in many cases was unsurmountable, owing to a lack of technical training and the shortage of help in the way of suitable books.

At last the book long needed is to be published. *Furniture Upholstery For Schools* is the promising title. The author is Emil A. Johnson, Assistant Professor of Manual Arts at Bradley Polytechnic Institute. Professor Johnson has made a thoro study of the subject and with his appreciation of classroom requirements will present in his book a fund of practical information of great value to the teacher and student.

Furniture Upholstery will deal with the subject historically, tell of the tools and materials used and show in beautiful halftone illustrations fine examples of finished work. Detailed and practical instructions will tell how to upholster a variety of articles varying from a simple low foot stool to a Queen Ann stool, re-upholstering old furniture and spring-edge upholstery work, etc. The book will abound with illustrations. Every teacher of furniture construction will find this book, when ready, a much prized volume in his personal library. It will be published by The Manual Arts Press sometime this spring.

A recent issue of *Manual Training,* The English magazine, devotes considerable space to a review of *Mechanical Drawing Problems.* After giving a good description of the book it concludes the review with this brief estimate. "We have no hesitation in recommending the book as the best—if not the best—of its kind." One of our American teachers in a letter relating to this book says, "I know the boys will be delighted at not having to wade thru pages of words of "pet ideas" of some of our "long-winded pedagogues." These are typical of the many favorable comments which this text is receiving from all sections.

The American Library Association has recently issued a Reconstruction Hospital List. This list includes books and periodicals on 150 subjects. While arranged primarily for use by headquarters it offers a basis for selection by hospitals and other agencies in the support of the work of the Surgeon General's Office. Of each title it gives the author, publisher and price. The titles are classified by subjects and a wide range of activities, trades and occupations are fully treated, as well as other subjects including, Business, Agriculture, Vocations, Engineering, Civics, English, Handicraft, etc. It reflects good judgment in the selection of the best American books which are neither too elementary or too specialized for the vocational purposes in view.

The *Manual Training Magazine* is included under technical periodicals and in the list are included a number of books published by The Manual Arts Press.

A new edition of Griffith's "Projects for Beginning Woodwork and Mechanical Drawing," has just been published. For this edition the type has been re-composed. This book is essentially a collection of projects, among the best to be obtained in any form for use in grammar grade classes. They meet all the requirements of good design, boy interest, proper sequence, and correlation with mechanical drawing. It is just the book for producing results in the last two grades of the grammar school. The new edition lists at $1.00.

Its companion for high school classes treats of furniture making and illustrates an excellent collection of simple, straight-line furniture, each piece being shown in perspective as well as in working drawings. This book also by Griffith is entitled "Furniture Making—Advanced Projects in Woodwork." Price, 95 cents.

The shortage of toys, due to the war, has developed a renewed interest in this fascinating field. Manual training teachers have found toy making not only fascinating to the boy but to possess high educational value as well. Among the few books suited to this work are "Manual Training Toys," by H. W. Moore, published by The Manual Arts Press, price $1.15, and "Manual Training Play Problems," by W. S. Marten, published by the Macmillan Company, price $1.25. Both books contain working drawings, instructions regarding tools, materials and methods of working.

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SCHOOL SHOP SUPPLIES

MAKE MUSICAL INSTRUMENTS, etc. Secrets of selecting material, preparing, bending, fastening, ornamenting clearly described. Full size drawings of a Double Neck Guitar included. The most satisfactory all-around instrument in existence, easily played and carried, one Neck, giving clear, powerful, harp-like tones; the other a deep rich bass, good for solos or accompanying. $1.50. Technical Descriptive Co., P. O. Box 16, Waltham, Mass.

MORGAN MANUAL TRAINING MATERIALS—A perfect system of dry kiln enables us to give you lumber thoroughly dry. Carrying in stock large quantities of different woods permits us to fill your orders with the best selections, also built-up panels polished two sides. Write, sending us a list of the materials you desire. We will quote you attractive prices. Morgan Company, Oshkosh, Wisconsin.

BLUEPRINTS FOR "WARD-ROBE" CEDAR CHEST, "Convertible" Table, Hall Seat with "Cedar Chest Feature," beautiful "All-Wood" Table Lamp, Hall Clock, Combination Library and "Drawing" Table, and other articles. Any one of above mentioned will be sent postpaid for 15 cents in silver, or six of them for 75 cents in silver or personal check. Send money at my risk. Money back if not satisfactory. F. O. Koch, 1300 First Avenue, Peoria, Ill.

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HAND LOOMS—For use in hospitals, schools and homes. Send stamp for circular and Rug Folio. Faribault Loom Industries, Faribault, Minnesota.

"WORKSHOP NOTE-BOOK-WOODWORKING," by George G. Greene. A small-size textbook and notebook combined. Contains important directions about tools and processes, together with suggestions, helps, ideas, questions, etc. Blank pages allow for taking notes and making sketches. Single copies, 19 cents. discount in quantities. The Manual Arts Press, Peoria, Illinois.

TOYS! THERE IS NO END TO THE TOYS which can be made from thin wood by the use of the coping saw. "Coping Saw Work" by Johnson, is a little book which gives just the help needed. It tells about the material, how to make, etc., and outlines a course for the fourth grade. The illustrations show many designs and a large number of completed toys. Price 20 cents. The Manual Arts Press, Peoria, Illinois.

BETTER LETTERING—Nothing contributes more to an accurate and well conceived drawing than good lettering and dimensioning. Every instructor of drawing and manual training should acquaint himself with the Thorndike Lettering Sheets. Not a sheet to copy from but to practice on. The style of letter adopted by the engineering concerns of the country and taught in all the technical schools and colleges. Will simplify the teaching and improve the quality of lettering in your classes. Write today for samples to Chester L. Thorndike, Technical High School, Springfield, Mass.

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CUSHIONS—You know your cushions will be made right when furnished by the Grand Rapids Cushion Company. Write for estimates on cushions and all kinds of upholstery supplies. Grand Rapids Cushion Company, Grand Rapids, Michigan.

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FOR PHOTOGRAPHS of furniture with sizes, or full sized working drawings of furniture, write to W. E. Rodick, Bar Harbor, Me.

EARN MONEY AT SCHOOL during your spare time representing the MANUAL TRAINING MAGAZINE. No investment required. The work is pleasant and profitable. Write at once for territory and terms. Address Business Manager, The Manual Arts Press, Peoria, Illinois.

MANUAL TRAINING TOYS, by Moore, tells how to make darts, buzzers, tops, guns, whistles, bow and arrows, swords, boxes, telephone, windmills, kites, waterwheels, water motors, pumps, boat, pile driver, kite string reel, cannon, etc. It is full of fun for the boy in his own shop and will add new interest in the school shop. Price $1.00. The Manual Arts Press, Peoria, Illinois.

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All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request.

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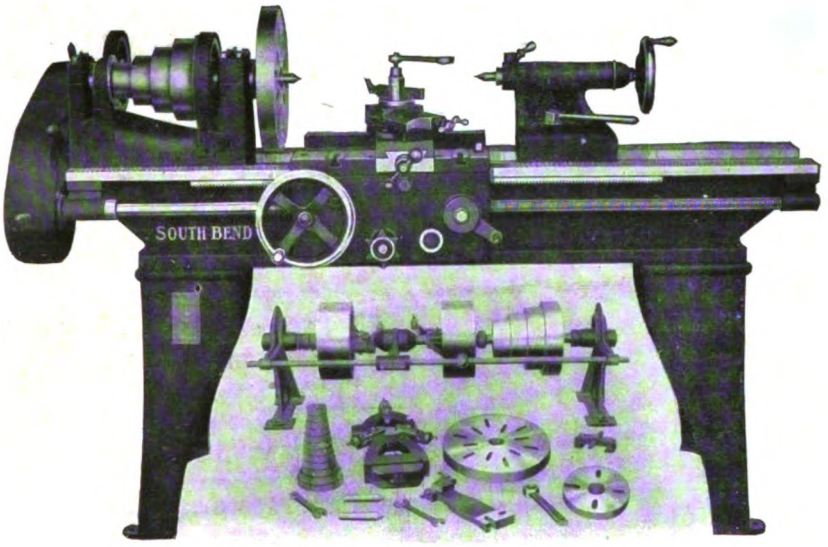
SOUTH BEND LATHES



The 15 in. x 6 ft. Lathe illustrated above is the most practical size for the School Shop.

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Send for book entitled

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which shows the interior views of some practical school machine shops.

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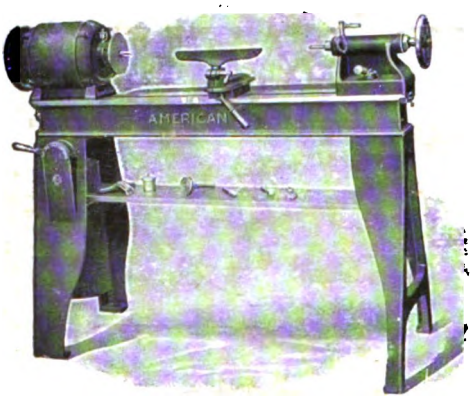
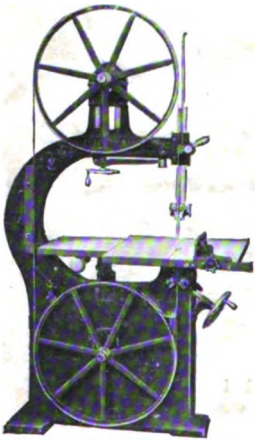
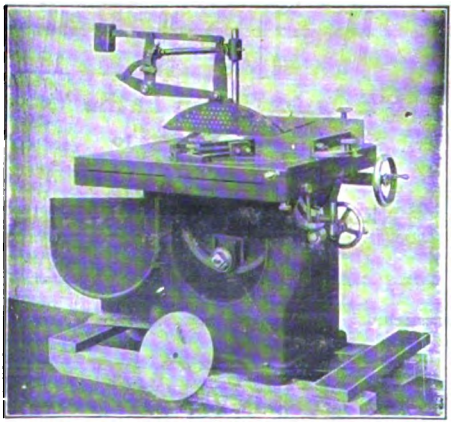


American 12-inch Speed Lathe
(A. C. Headblock)



American 30-inch Band Saw
(Direct Attached Motor)



American No. 20 Saw Bench
(Patent Automatic Guard)

Consider the Activity of Cabinet Making

It Is Profitable

A FEW years ago the Board of Education of Rochester, N. Y., organized an elementary Vocational School. **"American"** Woodworking Machinery costing $850 was installed.

In 1912 a group of pupils turned out on those machines **School** furniture worth $2900.

Since 1912 a tool has been added from time to time as the need for it arose until now there is in the Rochester Public Schools a complete equipment of **"American"** Woodworking Machines for Cabinet Making.

In 1917 there was turned out on these machines furniture valued at $13,800. The tools have paid for themselves many times over.

Pupils from the sixth, seventh and eighth grades operate the machines **safely** and efficiently because the cutting mechanism is properly guarded.

Buffalo, New York, Jersey City, New Jersey, Winnipeg, Canada, and a hundred other cities are doing the same thing. May we tell you how you may make **"American"** machines pay for themselves in **your** schools?

American Wood Working Machinery Co.

591 Lyell Avenue **Rochester, N.Y.**

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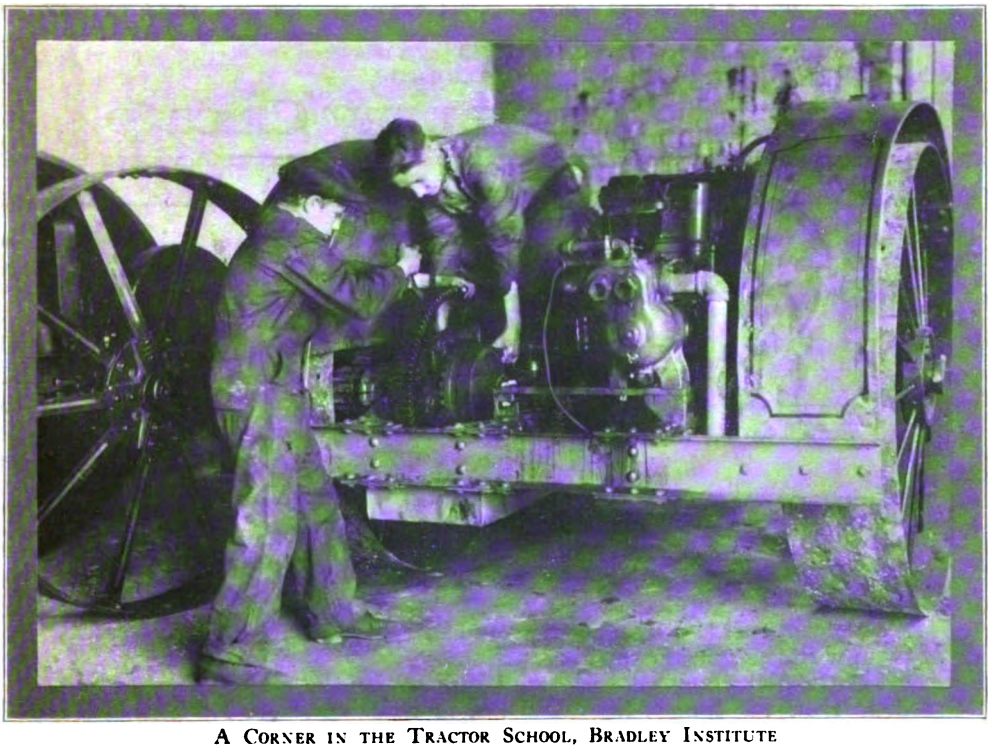
Vol. XX SEP 9 1919 MAY, 1919 No. 9

MANUAL TRAINING MAGAZINE

DEVOTED TO THE MANUAL ARTS IN VOCATIONAL AND GENERAL EDUCATION



A Corner in the Tractor School, Bradley Institute

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NOTICE TO READER.

When you finish reading a magazine bearing this notice, place a 1-cent stamp on this notice, mail the magazine, and it will be placed in the hands of our soldiers, sailors or marines. No Wrapping—No Address. A. S. Burleson, Postmaster General.

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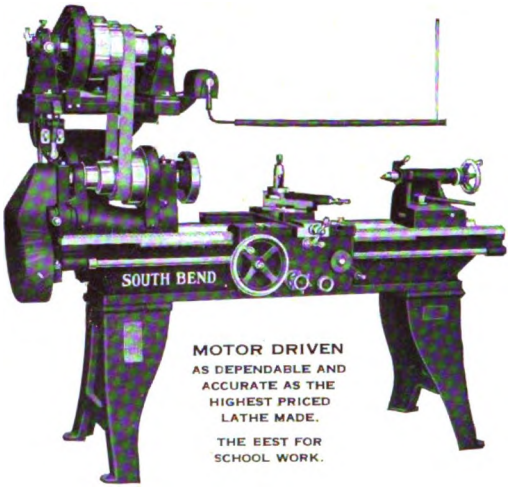

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TOOLS THAT EDUCATE

If good tools are essential to good work only the best should be used for educational purposes.

EVERYTHING

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The Channon Line includes all of the standard and best known makes of tools and instruments. Our enormous stocks and economical methods of merchandising enable us to offer quality, service and prices which are unsurpassed.

Our No. 80 catalog of 1150 pages including 50 pages of special engineering information of value to every mechanical man will be mailed on request.

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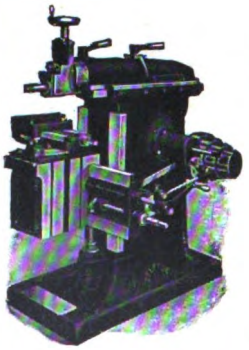

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They will produce small parts quicker than the larger machines.

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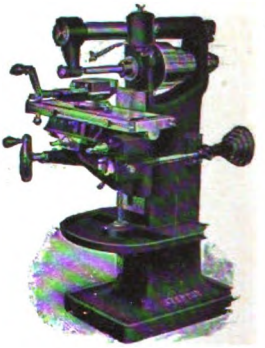
They will cost less money and you can buy more of them with the same appropriation.

They can be handled easier and quicker by the student than the larger, heavier types of machines, and our seventy-one years of experience with thousands of machines in use giving daily satisfaction are a recommendation for our product that you should not overlook when buying your equipment.



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MANUAL TRAINING MAGAZINE

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WASHINGTON CORRESPONDENCE

Anniversary Dinner of the Bureau of Education—Education a National Duty and Responsibility; Arbitrary Uniformity Not Desirable; Adequate Appropriations Will Bring Results; Federal Stimulus and Guidance Rather than Control; High Standards for Teachers Imperative; Vocational Education of Paramount Importance; National System of Education Should Be Complete; Other Nations Aroused—Important Projects in Peril; Evening Schools Suspended; Employment Service Threatened; Bureau of Education Affected—Office of Federal Board Moved.

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This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.

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RECONSTRUCTION
The War is ended, and the great civilian army of the Universe is ready for the problem of reconstruction.
Carpenters and Mechanics who are a part of this great industrial army, can increase their efficiency and lighten their labor by using the famous
Atkins Silver Steel Saws
There is an Atkins Saw for every purpose and the Atkins name on it is a guarantee that the saw will run easier, cut faster and hold its edge longer.
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FIELD NOTES

INTEREST in educational opportunities for miners is growing rapidly. In Oklahoma, under the provisions of the Smith-Hughes Law, instruction in all subjects relating specifically to the work of coal mining is being undertaken thru both vocational and non-vocational evening schools. The work in vocational evening schools includes mine ventilation, mine gasses, mine timbering, mine machinery, safety lamps, shot firing, and mining laws. In the non-vocational evening schools the work is adapted to the needs of miners who have had little opportunity for academic training, but who are ambitious to improve themselves by evening study in order that they may be able to occupy positions of responsibility.

Illinois coal miners and mine operators also are awaking to the opportunities afforded under the provisions of the Smith-Hughes Law. A recent state conference was held at which plans were laid for furthering their educational interests.

AROUND NEW YORK

The second meeting of the year of the School Crafts Club was held February 15, 1919, at the Broadway Central Hotel, New York, and consisted of three round table conferences.

Table No. 1. Machine shop practice was discussed by Henry D. Burkhardt, Dickinson High School, Jersey City. Mr. Burkhardt spoke of the various methods in use at Dickinson and told of the results obtained. Among other things mentioned, he said that some sixty lathes had been constructed at this school by classes and that work for firms outside the educational field had been done by the machine shop classes.

Table No. 2. Cooperative apprenticeship courses as now given in Paterson, N. J., were explained by Russell F. Hemion of the Paterson high school. Boys work two weeks in the trade and two weeks at the school thruout the year, receiving a wage for full time. A very complete scheme was explained and seems to be meeting with success.

Table No. 3. The school bazaar was discussed by John J. Hatch, State Normal School, Newark, N. J. He explained that the purpose of the bazaar in Newark was to give the children added interest in the Junior Red Cross and to bring before the people of the city an excellent exhibit of industrial arts work. About sixty problems were taken from the bazaar collection and shown to the Club members. Mr. Hatch said that every phase of the industrial arts department was represented and that every child from the first grade thru the high schools had helped.

The March meeting of the Club also was held March 15, 1919, at the Broadway Central Hotel, New York. After a short business meeting, at which seven new men were admitted to membership, Ernest W. Watson, head supervisor of classes, Pratt Institute, addressed the Club, on poster making. Mr. Watson illustrated his remarks by making a complete "Borden's Evaporated Milk" poster, maintaining, however, that the main problem of a successful design consisted in the proper idea, which then had to be suitably clothed for public appreciation.

Judson G. Spofford, assistant for the training of teachers of trades and industries, State Department, Trenton, N. J., gave a short resume of his work in training teachers for the shipbuilding trades. Jersey City, New Brunswick, Newark and Atlantic City were designated training centers; about 800 students were enrolled for a ten-weeks' course, the instructors being drawn from the industry.

General Hospital No. 9, located at Lakewood, New Jersey, is doing excellent work in the reconstruction of wounded soldiers. The hospital contains a large machine shop where machinists and auto-mechanics are trained. A carpentry shop and an upholstery shop are located in one of the large halls. In addition, there is equipment for teaching printing, tailoring and shoemaking. Typewriting and knitting are also taught under competent instructors.

Thursday evening, March 13, was observed as visitors' night in the school of science and technology of Pratt Institute, Brooklyn, N. Y. From 8 to 9 o'clock all the shops, laboratories and drawing rooms of the school were open to the public, giving an opportunity to all persons interested in industrial education to observe the students at work in the various courses and to inspect the results and methods as well as the equipment and general facilities of the Institute for conducting this kind of industrial training. The school of science and technology provides

(Continued on p. VI.)

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instructors in industrial electricity, technical chemistry, mechanical drawing and machine design, strength of materials, stationary steam engineering and power plant operation, internal combustion engine work, machine work and tool making, forge work, wooden boat and ship building, and roof framing. A special feature of the work this year is the organization of a number of courses to meet the demands arising from the war. These courses are boat woodworking, ship drafting, and marine and gasoline engine operation.

The school is now giving instruction in its evening courses to more than 1300 men who are regularly employed in various vocations and who use these courses as a means to prepare themselves for more effective service.

Dr. William L. Ettinger, superintendent of schools, recently asked teachers and members of the supervising staff of the school system to scrutinize anew "our work, our methods, and new discipline" in order to get a new vision of the purposes which the schools must serve in the present period to "insure the salvation of our democracy thru the proper training of our future citizens." Dr. Ettinger did not undertake a defense of traditional school methods, but he did emphasize the fact that if our achievements and those of our allies have demonstrated one fact above all others, the morale of the nation is more vitally significant than any degree of material prosperity, and that its quality is the fruitage of a proper educational system. Vocational and manual training instructors have excellent opportunities to utilize the thrilling events of the present to show the value of their work in the development of good citizenship.

The State of New York has established a military and vocational training commission for the whole state. The military training of the commission is to provide instruction in physical training and military training for all boys above the age of sixteen and not over nineteen years of age. Under the provisions of the law the state on December 3 enrolled a regular army corps of boys totaling 500,000. The time set for training is three hours a week and what this time will do for the boys, especially the boys of the congested centers of population, may easily be inferred from the excellent results which the training in the national army has achieved in straightening bent backs, in throwing back stooped shoulders and giving an air of unprecedented spryness and physical fitness to the 5,000,000 Americans who are and were under arms.

Many of these millions will feel in his old age the benefits of the physical training which he received in cantonments or at the front. Many men will be quicker of action, more decisive in conduct and more amenable to self control, because of the discipline which he has received in the army. The perpetuation of these benefits for the entire boyhood of the state is considered by most educators to be a thoroly useful innovation, even not considering the larger utility of the new law as a measure of preparedness for any military problem that the nation may face in the future.

There is a section in the law that states that certain requirements for military training may in the discretion of the commission be met in part by such vocational training or vocational experience as will in the opinion of the commission specifically prepare boys of the ages named for service useful to the state either in the maintenance of defense, in the promotion of public safety, in the conservation and development of the state's resources, or in the construction and maintenance of public improvements.

—W. H. Dooley.

IN AND ABOUT BOSTON

On March 20th, the Wentworth Institute held its annual public exhibition of the work of the evening classes. Work of an exceptionally high standard was shown in the many shops and classrooms, and as usual a large number of people attended. The exhibit covered electric wiring, plumbing, applied science, pattern making, machine shopwork, forging, foundry work, including brass and aluminum castings and core making, power plant practice, gas engine laboratory, mechanical drawing (machine and tool design and architectural drawing), printing, carpentry, building materials laboratory, etching and the graphic arts, electricity for discharged soldiers, sailors, and marines, photographs of war work and war training, and Wentworth Institute War Posters. The army barracks and mess hall used for housing soldiers in training at the institute were open for inspection.

(*Continued on p. VIII.*)

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The Finish Is Important!

SURELY this is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

JOHNSON'S WOOD DYE

Is just the preparation for staining models. It is very easy to use—goes on like oil without a lap or a streak. It is made in 14 attractive shades—which may be easily lightened and darkened. Over the dye apply a coat of

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This gives a soft, artistic finish of great beauty and durability. It is clean and easy to use and economical—no tools or brushes required—all you need is a cheesecloth rag.

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Write for our booklet on wood finishing. We are glad to furnish it free to Manual Training teachers and pupils.

S. C. JOHNSON & SON,
"The Wood Finishing Authorities"
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FIELD NOTES—(*Continued from p. VI.*)

The graduating exercises of the fourth class of the Boston School of Occupational Therapy were held at the Wentworth Institute on April 4. Colonel Joel E. Goldthwaite addressed the students and friends on the curative value of occupations. He told of the need for hospital aides properly trained to direct the activities of the patient, and made the statement that curative occupations given to wounded soldiers in France reduced the time of hospital attention to two-thirds of that necessary when no hard work is provided. At a time when there was a shortage of beds for our soldiers in France, the Surgeon General found the work of such importance that schools for training women aides were in immediate demand. It is to be hoped that the industrial cripples and those from civil life who are compelled to spend weeks and possibly months in hospitals will have the benefit of such treatment as will aid them to more rapidly regain their health.

An exhibition of the work done by the Occupational Therapy class was held in one of the classrooms of the institute. The exhibit included work in leather, cord work, bead work, toy-making, wood carving, modeling, gesso work, basketry, and applied design. A list of the objects made will give an idea of the great variety of interesting problems adaptable to the possible needs of the different patients. There were note books, books rebound in leather, calendar backs, card cases in leather, bill cases, plaster casts from clay models, decorated boxes, baskets, woven mats, knit goods, toys, doll's furniture, picture frames, bead necklaces, sponge bags of cord, dish mops, carved book supports, etc. The excellency of design and coloring and the individualtiy of expression were pleasing features of the exhibit.

The designs as applied to pictures frames and book ends were well executed in low relief and the results were very effective. In all the work care was taken to demand only such operations as could be performed by one in a reclining or sitting position. The making of the objects required various degrees of skill and artistic ability, so patients in all stages of recovery can be suited. The toy-making was particularly interesting. It was expressive of much individual initiative on the part of the students. In presenting the work to the hospital patients, similar initiative would be encouraged rather than confining the patient to copy work.

In reviewing this exhibition, which was the result of only three months' intensive application, one cannot help questioning the methods of the public school. Instead of having the children "carry" many subjects long periods of time, would we not gain by concentrating their attention on a few subjects for shorter periods of time? Surely the results from short intensive courses made necessary by the war have been so gratifying that school officials may well give the matter thought. At present, two things seem to be lacking. One is the motive to stimulate the pupil to his greatest effort and the other is the opportunity for concentration. Can we not both motivate the child's efforts and develop his powers of concentration to a greater extent than has been general in the past?

At the April meeting of the Boston Manual Training Club, Josef Sandberg, of the Sloyd Training School, spoke of the work of the Boston School of Occupational Therapy. Much of what Mr. Sandberg told is covered by the above. He has been instructing the students in woodwork since the school first started about a year ago. At that time there was little material available to guide one in this new work, and the success of the toy work and carving is due to his skilful handling of the problem.

Following Mr. Sandberg's talk, Alvin E. Dodd spoke informally to the members about the Towner Education Bill which will be before Congress the next session. He strongly favored its passage, and impressed the men present with the importance of their individual and collective influence. The bill should not be considered a political "pork barrel" but should be accepted on its merits in providing for better educational advantages thruout the country. Mr. Dodd also referred to the emphasis now being made on job analyses in the industries. The Federal Board has been doing much work in this line, and a number of bulletins may be secured upon application to the Bureau of Labor Statistics, Washington, D. C. Also from the Supervisor of City Records, New York City, copies of an "Industrial Education Survey" may be obtained. Job analysis is becoming more and more generally

(*Continued on p. X.*)

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AMERICAN EDUCATOR

Being a facsimile of the front page of a school paper such as could be printed in your school—if printing outfit were installed.

Education Department — American Type Founders Company — 300 Communipaw Ave. Jersey City, N. J.

Print Shop, Woodward High School, Cincinnati, Ohio

"Progress"

The School Paper of the Middlesex County (N. J.) Vocational School, says:

EVEN if the boy does not elect to follow the printing trade, his training in this department must benefit him in any walk of life. What wood is to the Woodworking Shop and metal to the Machine Shop the English language is to the Printing Shop. The constant forming of words and sentences with type is one of the best ways of teaching a boy spelling, punctuation and English composition. In this era of well-established recognition of the value of publicity, the Printing Department is a very important medium. In no other department of vocational training is there the opportunity to place before the boys, the parents, the taxpayers and the public at large, quickly and concisely, an accounting of what the schools have done, are doing and what they expect to do.

EDUCATION DEPARTMENT

American Type Founders Company

JERSEY CITY, N. J.

Selling Houses in Nearly all Large Cities

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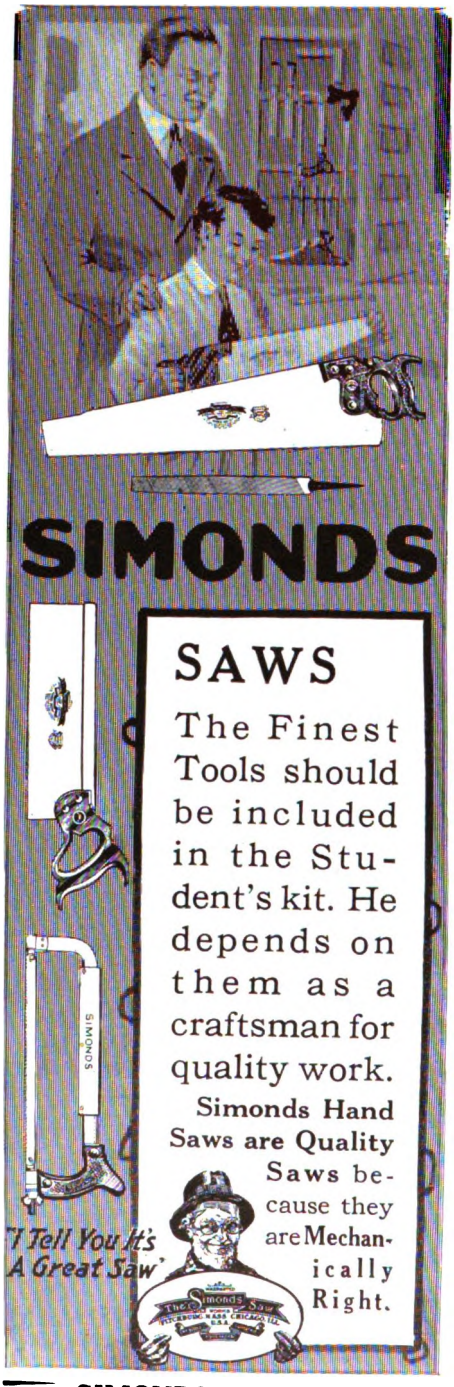
SIMONDS
SAWS
The Finest Tools should be included in the Student's kit. He depends on them as a craftsman for quality work.
Simonds Hand Saws are Quality Saws because they are Mechanically Right.
"I Tell You It's A Great Saw"
SIMONDS

SIMONDS MFG. CO.
"The Saw Makers"
Established 1832. FITCHBURG, MASS.
5 Factories 11 Branches

FIELD NOTES

(*Continued from p. VIII.*)

applied to industries. This is also true of the department stores where effort is being made to determine the exact duties of each employee. In any given position it is desirable to determine (1) what the employee must know; (2) what he must be able to do, and (3) what he himself must be.

The report of the Education Committee was next presented to the members for discussion. It was decided that the voluminous report of the former education committee was too valuable to hold back from publication. At the time it was started, it was planned to present it to the Commissioner of Education at Washington, to be printed as a government bulletin. The present committee will supplement the report and apply to Washington for its publication. If acceptable, it will serve as a suggestive treatise on the aim and scope of manual training as applied to nine different activities.

At a previous meeting of the club, a resolution in support of the Towner Education Bill was passed, and in order that the club's influence in this direction may be felt, the following letter will be sent to all the Congressmen from Massachusetts, and all the Senators from the New England States:

Dear Sir:

The Boston Manual Training Club, composed of two hundred and seventy-five men, representing directors and teachers in the manual and industrial arts, unanimously adopted a resolution directing their executive committee to prepare and forward to you a statement of their position in regard to the Towner Education Bill, H. R. 15,400.

If cabinet officers and large appropriations are necessary for the development of the material world, is there not even greater need for such to further the development of the mental and physical life of our country's future citizens? Is this not of vital importance to all human progress? The appalling number of illiterates and physically unfit among those called for service in our recent emergency is convincing proof that remedial measures should be taken at once.

Our country should have led the world in creating a department of education. As it is, we

(*Continued on p. XIV.*)

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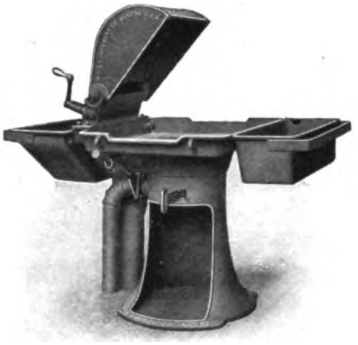
are almost exclusively used in the Largest Technical Colleges and Manual Training Schools.

We build the entire Forge Equipment including supply fans, smoke exhaust fans, ducts and flues.



Type H Forge.

This Forge, especially designed for training work, is furnished with adjustable down-draft hood, and if desired, with Steel Plate Base of Drawers with Padlock for each pupil.

Our Engineering Staff will help you plan, and the Service Department is a guarantee of satisfaction.

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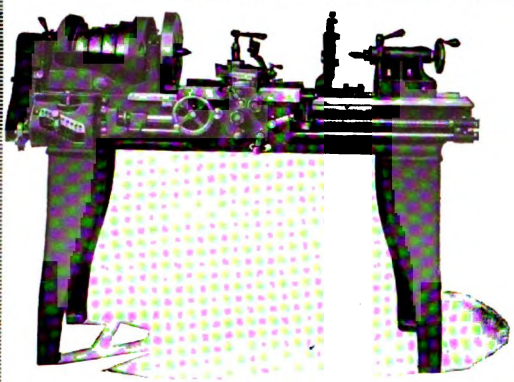
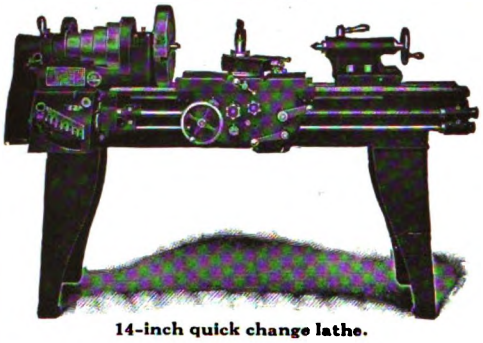
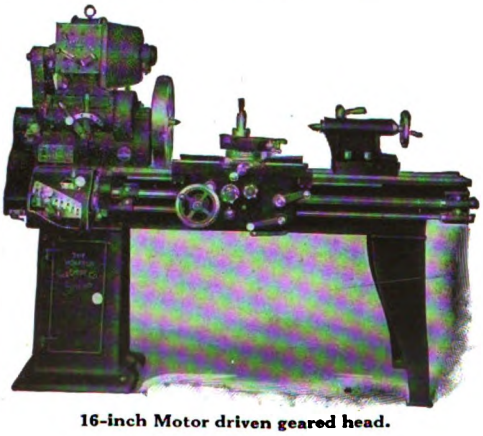


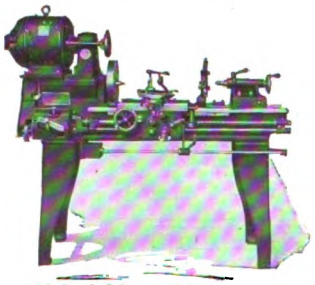
12-inch quick change lathe.



14-inch quick change lathe.



16-inch Motor driven geared head.



12-inch Motor driven lathe.

MONARCH LATHES

from 10 to 30 inch swing

offers the ideal lathe for the manual training school. They are furnished in any style and with practically all attachments desired.

MONARCH lathes are low in price yet are as accurate as the highest priced lathes. By installing **MONARCH** lathes you can in many instances put in **two MONARCH** lathes for the same cost as **one** of the high priced lathes.

MONARCH lathes are in use in many factories and tool rooms with lathes costing almost twice as much doing just as much and as accurate work.

It is not necessary to pay a high price to secure a good engine lathe.

Let us send you our catalog and list of manual training schools using the Low Priced **MONARCH** lathes.

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VOLUME XX No 9

MANUAL TRAINING MAGAZINE

MAY, 1919

A STUDY OF SOME PRACTICAL VALUES OF PUBLIC SCHOOL MANUAL TRAINING IN THIRTY-SIX CITIES OF WISCONSIN

THOMAS ROBERT FOULKES AND THOMAS DIAMOND
Both of the University of Wisconsin

THIS is the first of a series of five articles which present the results of an investigation made primarily for the purpose of establishing a fact basis upon which to build a course of study in manual training for the State of Wisconsin. But Wisconsin is typical of many states where agricultural and industrial interests predominate. The findings of this investigation will therefore be of just as much value in other states as in the state where the investigation was made.

The investigation was not concerned with vocational or prevocational values, but aimed to discover whether or not reliable evidence could be found to prove that manual training does actually function in the lives of the pupils. The investigators endeavored to discover whether the manual training work of the school does actually carry over into the everyday life of the pupils, influencing their out-of-school activities.

From the evidence obtained the authors have sought to work out a plan for devising courses of study which will include only those things which are of use and of greatest interest to the pupils. Such a course would eliminate those things which have no motive within the vision of the pupil. —*The Editors.*

"Is manual training of real vital worth, actually influencing manual activities of school pupils? Or is it 'in the air,' some vague thing not taking effect? Can actual reliable evidence be presented to show that manual training 'functions' in the lives of pupils?" These questions are asked by educators and others interested in the welfare of public school pupils.

The establishment of a *fact* basis for values of manual training in our public schools is as yet a new field in the science of education. Such a study as the one described in this article suggests the won-

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derful possibilities of work in this field. The attempt was made to determine facts in regard to the connection existing between the work carried on in the school, and the use made by the pupil in his daily home life of the knowledge and skill acquired in school, to the end that the conclusions reached would be based on fact rather than upon the opinion of the investigator.

The present tendency among advocates of manual training is to place the emphasis upon the use which the child will make of his practical work *after* he leaves school. If this tendency persists, the natural inference must be that the work is valueless to those who will not make use of it in their future vocations. Manual training should be of practical value to pupils regardless of whether or not it is used in future vocations. That is to say, manual training should have immediate practical values for pupils regardless of prevocational values. The result of the present emphasis upon prevocational values has been to swing completely from the education aim to the other extreme. In addition to whatever educational and prevocational values which may be ascribed to manual training, there should be immediate practical results of value to the child as a part of his general education. It would seem desirable, therefore, to establish a fact basis to prove that manual training functions in the lives of most of the children, in addition to any educational or prevocational results obtained.

With these points in mind a test was devised which would indicate whether or not the boys made things which were used, whether or not they had tools at home to work with, whether or not they sought to make use of their skill by repairing at home, and whether or not they made any use of their acquired learning in earning money.

The test was first applied to 175 pupils who were afterwards personally interviewed and closely questioned in regard to the answers they had written, in order that the information obtained might be full and explicit and that the results obtained might be used as a "yard-stick" in checking results from other groups of pupils.

The corrected and improved test was then applied to pupils in 36 cities of the state. The test consisted of five questions as follows:

1. What things have you made which are in use or were used in your home, barn, garage, or yard?
2. What repairs have you made on furniture, doors, windows, etc., at home, store, office, or elsewhere?
3. What have you learned in manual training to help you in the work you do to earn money? State exactly what you do.
4. Have you the common tools at home which you use readily in your work or play? If so name them.
5. When repairs are needed do you attempt to make them, or do you call a workman? Give examples.

The test was accompanied by "Suggestions for Applying the Test" which covered any difficulties which the instructor might encounter in giving the test to a class. These suggestions were:

It is desired to have the test applied without discrimination, that is, to a regular class rather than to a picked group of individuals.

If in each question, or any question, the truthful answer is "No" or "None," be sure to write it.

Question 1 applies to anything made by the pupil regardless of whether or not it was made in the manual arts classes. The important elements are: (1) That the article was used, (2) That it was made by the pupil.

Question 3 is intended to apply not only to carpenter work, but to any particular work at home, farm, store, or office where a pupil makes direct application in use of tools.

Please instruct pupils to be specific in naming the things they do to earn money. It is desirable to have "No" or "None" after a question wherever that is the true answer.

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The important point in Question 5 is the attempt to do work. Here again "Yes" or "No" is desired as the case may be. Examples are necessary if "Yes" is the answer.

INTERPRETATION OF ANSWERS

It was found in Question 1 that almost without exception each of the 1,532 pupils tested made one or more—in most cases more—articles which were actually in use. Thus the answers to this question presented 100% affirmative answers. The value in this data lies in a study of projects made in relation to the individual and to his grade in school. The projects which the pupil made use of were of such a nature that they fell within well defined groups. In making this division the doctrines of interest and motive were kept in mind in order that the data obtained might be useful in rearranging the course of study, in working out a new course of study, or in suggesting new elements for the course of study. The application of this data in devising a course of study will be discussed in detail in a subsequent article. Main groups of projects made and used were: furniture, toys, shop, office, household, kitchen, and farm.

In each of the other four questions it was desired to know what percentage of the boys gave affirmative answers. In none of these, however, was a mere "Yes" considered an affirmative answer. In Question 2 if the "Yes" were supported by such information as that the pupil had put a glass in a window, reglued a chair, or performed one or more similar pieces of work his answer was considered an affirmative reply. In this case a record was kept of the nature of the repairs, and this will be discussed in a later article, *Teaching Home Repairs in the School Shop.*

In considering Question 3, "Yes" and "Lots of Things" were not considered affirmative answers. However, if a boy said, "Helped build a sidewalk for $1.50," or "I made a carrier for my bicycle to help me in delivering papers," or some similar answer which showed an application of tool processes it was considered an affirmative answer.

If in reply to Question 4 a pupil said, "Yes, hammer, saw, chisel, plane, and others," or named other tools it was considered an affirmative reply.

It was thought that one result to be expected from the study of manual training would be inspiration—which comes from a sense of mastery of material things —to attack new and similar problems under other circumstances than the school shop. It was thought that if an accurate determination could be made of how many boys were *attempting* to do things at home and elsewhere than in the school, it would serve as a reliable evidence as to one value of manual arts teaching. Therefore, if in answer to Question 5 a pupil wrote, "Yes, I fixed a window, chair, and put a board in the sidewalk," or presented similar evidence, it was counted as an affirmative reply.

RESULTS AND CONCLUSIONS

Compilation of the answers to Question 1 showed a grand total of 8,782 articles made and used by 1,532 pupils. These articles fell within the groups previously mentioned, in the following order with the number of articles indicated: (1) furniture, 2,592; (2) kitchen, 1,921; (3) toys, 1,712; (4) household, 1,405; (5) shop, 491; (6) farm, 372; and (7) office, 290.

For the 1,532 pupils tested furniture was the most popular form in production and use. This may be due in part to emphasis upon furniture making in the course of study. The "play" element, evidenced by articles counted as toys, persisted thruout all the classes tested. The projects listed under "farm," however, were named only

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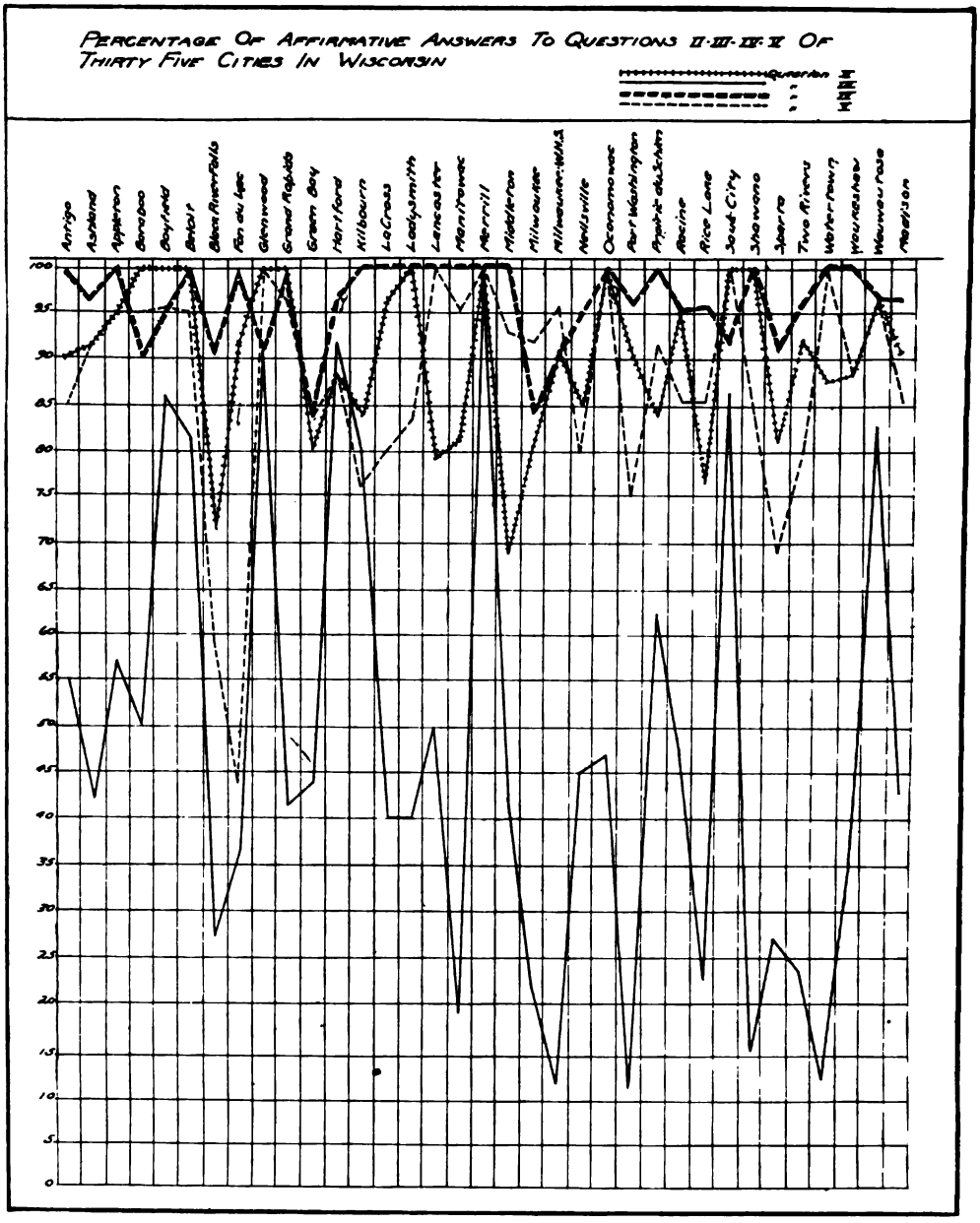

GRAPH SHOWING RESULTS OF SURVEY IN WISCONSIN

by boys in classes attended by country boys. This fact indicates the necessity of adapting courses to interests and needs of the country boy in schools which he attends.

Conclusion—The fact that 1,532 pupils in manual training in 36 cities made and used 8,782 projects cannot be interpreted in any way except that manual training is functioning in the lives of the pupils in respect to projects constructed by the pupils in the shop and at home.

The prominence of the play element—

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third in importance of all articles named—is emphatic evidence that a large consideration must be given to this factor in organizing a course of study. The prominence of this element in high school work as well as in grade work indicates the possibility of progression in the projects made. Courses of study must be adapted to community needs, as indicated by the large number of projects made for use on the farm.

The results of the answers to Questions 2, 3, 4, and 5 in thirty-five cities are shown graphically in terms of percentage of affirmative answers, in the accompanying graph. A comparison of cities will not be especially valuable inasmuch as the test was given under varying circumstances, to classes in different grades in school, and in communities of different industrial pursuits and interests. However, the graph is of interest in that it shows the range of variation of different cities. Thus we may say that it is of interest in that it shows graphically the general trend, or tendency of answers to each question. For instance, we note in the graph of Question 2 that no city falls below 68% and that nine reach 100%, while the general run is from 80% to 100%. In like manner we see that the graph of Question 3 touches a minimum of 12.5% and a maximum of 100%, with other cities at various points between the two. The lowest point on the graph of Question 4 is 84%. Fifteen cities reach 100%, and the general run is between 90% and 100%. The lowest point on the graph of Question 5 is 44%; three cities reach 100%; and the greater number range between 85% and 100%.

The large percentage of affirmative answers to each of the four questions indicates on the basis of actual, reliable evidence that manual training is influencing manual activities of the pupils; and that manual training is not "in the air," but it is taking effect in the lives of the pupils and is proving of real vital worth. We conclude that in addition to educational and prevocational values of manual training, pupils receive knowledge and skill of immediate, practical value in making their adjustments to the times in which they live.

PRINTING A PAPER IN A SMALL HIGH SCHOOL

V. E. SAYRE
Head of the Department of Manual Arts, University of North Dakota

DURING the past few years printing has taken a prominent place among the manual arts taught in our secondary schools, largely due to the fact that its educational as well as its vocational value has come to be more fully recognized. This prominence has been attained to a greater extent in the larger rather than in the smaller high schools, not because the latter lack appreciation of the value of the subject, but because with them it is a more difficult matter to organize and prepare for the teaching of a number of industrial subjects. The high school paper which is entirely a school product has also become a prominent feature in connection with printing courses. It is therefore possible that a brief description of the way one small high school carries on work of this nature may be suggestive to those who contemplate its establishment in their own schools.

The University High School in connection with the School of Education of the University of North Dakota exists for the dual purpose of providing for the observation and practice teaching of students in the teachers' training courses, and of furnishing an opportunity for completing a four-year high school course to those who do not have such an opportunity at home.

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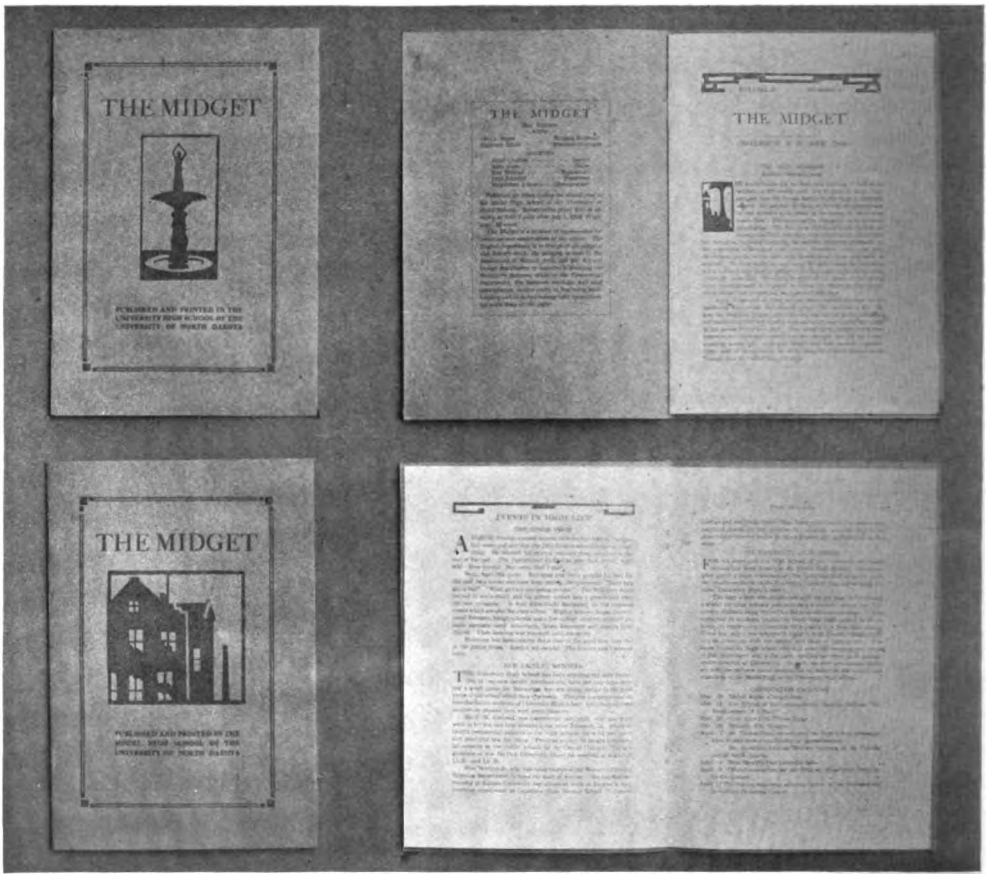
There has been an average of 100 students enrolled for the past several years.

A one-year course in printing was first offered in the fall of 1915. An inexpensive equipment was used in the beginning, which included a hand-lever press. Furniture on hand was adapted in the manual training shop to serve as type-case cabinets, etc. Later on an 8x12 job press and 50 pounds of body type with other miscellaneous articles were added.

Besides having been a manual training teacher for a number of years, the instructor's special qualifications for a teacher of printing are: experience gained in a print shop while a boy during vacation times, a summer school course in a teachers' training school, and a summer vacation spent in a local shop.

The time available for class work has been two hours a day at the same time the instructor taught mechanical drawing. This has been possible because the two equipments were in the same room, and the mechanical drawing classes were not large. The number of students taking printing has been on an average of six to eight, working one hour per day.



SCHOOL PAPER PUBLISHED AT UNIVERSITY HIGH SCHOOL, WHICH IS CONNECTED WITH THE SCHOOL OF EDUCATION, UNIVERSITY OF NORTH DAKOTA

The plan of procedure has been to introduce the primary processes of printing

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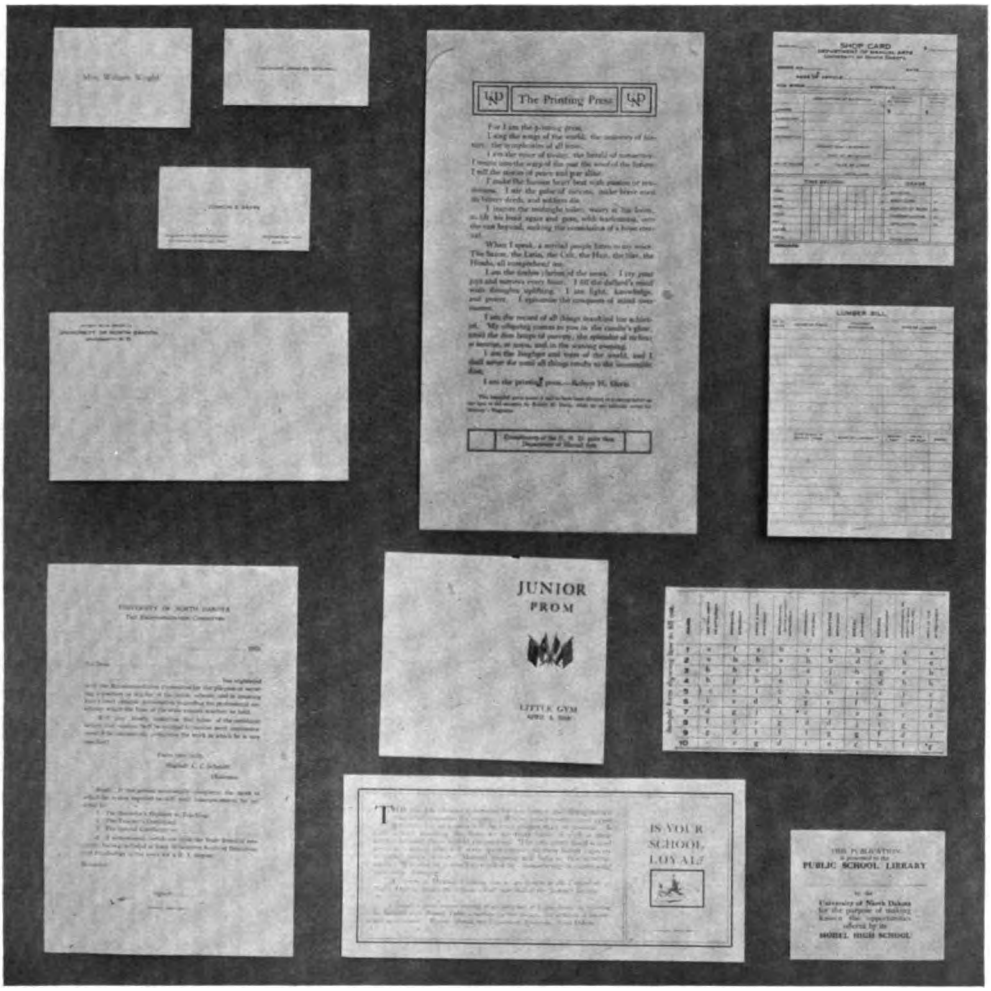
by suitable exercises, and then to apply them in practical work as soon as possible. For the past two years the high school paper has been a prominent factor in our printing course, and has given abundant opportunity for experience in straight composition, the reading of proof, and the correcting of type matter. In addition to this a considerable amount of miscellaneous job work is done, which is adapted to the ability of the students, and which gives a larger variety of experience in design and arrangement of type matter, imposition, makeready, and presswork than could be had on the printing of the paper alone. *Printing in School and Shop,* by Henry, is used as a text. While the prevocational benefits which the boys may derive from familiarizing themselves with the rudiments of one of the leading trades of the present age is not lost sight of, the chief emphasis is placed on the educational value of the subject, and the benefits of a general nature which may be derived therefrom.



EXAMPLES OF JOB WORK, PRINTED AT UNIVERSITY HIGH SCHOOL, UNIVERSITY OF NORTH DAKOTA

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The little school paper mentioned above, *The Midget,* is published six times a year in magazine form, having eight 6 x 8¾ in. pages and a cover. The body type used is Century Old Style, 10 point, No. 2, set in 25 pica measure with 2 point leads; the stock is University Book, India tint, with Holyoke cover in hazel shade; and the ink used is chocolate brown. Co-operation is a strong feature of the plan. The English, the Art and Design, and the Commercial Departments unite their efforts with the Manual Training Department.

The literary and editorial work is under the direct supervision of the English Department, and practically all students in the department cooperate with the board of editors. It is the plan to give credit for any article that merits publication. About once a month all classes are given some topic that may call forth "*Midget* material." All pupils are urged to be on the alert for something worth writing about. The young writer is given a taste of real authorship, and he finds that the rules for accurate expression have real import.

The Art and Design Department is in charge of the decorative features of the paper. The plan at present is to avoid the use of commercially made engravings, the idea being to make the paper entirely a school product, if possible. Only a beginning has been made in this field and it may be found advisable later on to change the policy in this respect. Woodcuts and those made from battleship (unfigured) linoleum have been found the most satisfactory mediums, and of these the latter is the more easily manipulated. A brief description of the process is as follows: The design to be reproduced is transferred by carbon paper to the linoleum, after which the background or highlight is cut away. The piece of linoleum is then mounted on a block of wood of such a thickness that the entire height will be a little less than type-high. Thin pieces of cardboard are added to the back to bring the surface up to the desired level. In using such cuts it is necessary that a soft tympan be employed, particularly in printing on cover paper.

The Commercial Department cooperates thru the staff stenographer and the business manager. The former is selected from the advanced class in typewriting. Her duty is to type all copy before it goes to the print shop, which work is accepted in the place of a corresponding amount of exercises usually required in the typewriting class. In like manner the business manager is chosen from one of the classes in bookkeeping, and is given credit for the accounts, records, and reports which he must keep. It is evident that while in the other departments work on the paper may be so handled as to stimulate all to activity, in the Commercial Department only these two students are affected. However, the practical value to them should not be underestimated.

Altho the paper in the University High School is comparatively young, and unsettled conditions, due to the war, interfered with plans during the two years previous, while the influenza quarantine completely stopped school work for the first quarter of this year, enough has been accomplished to prove the value of the undertaking. The work in the various departments affected has been given a vital impulse, and a school spirit of the highest order has been created—one which does not interfere with, but is an incentive to good scholarship.

We are given to talking about the enormous cost of education. We ought to talk more about the expense of ignorance.—*Ohio Teacher.*

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INDUSTRIAL WORK IN THE ENGLISH ELEMENTARY SCHOOLS—IV

WILLIAM BRADBURN
Head Master of Municipal School, Old Hall Drive, Gorton, Manchester, England

A BRIEF account has already been given of a few typical Schools of Industry existing in the 18th Century. It is true that these schools were founded mostly upon the basis of a vocational training, and although that was a very narrow and restricted view it is significant as showing that it was to education that men turned for a remedy for some of the evils of their time.

It was the Swiss reformer, de Fellenberg, who clearly demonstrated the educational value of industrial training. He greatly influenced educational thought and practice in this and in other countries during the early portion of the 19th century. He was looked upon as a practical, rather than a theoretical reformer. By his system he sought to cultivate the whole being, moral, physical and intellectual.

Birchenough in his *History of Education,* page 263, states that "he was acutely conscious of the supreme importance of manual activities in education, and the stimulus that comes from productive work, and regarded the child not as the mere recipient of the ideas of others, but as the agent capable of collecting, originating and producing ideas from contact with experiences of all kinds."

DE FELLENBERG'S INSTITUTIONS

Monsieur de Fellenberg was a country gentleman, and it was on his estate near Hofwyl, Switzerland, that he proceeded to put his ideas into execution. His institutions provided for three classes of pupils, viz., the children of the poor, the middle and the higher classes, but in each the same basic principle was observed. By the judicious admixture of manual with intellectual occupations, de Fellenberg endeavored to train his pupils so that they should become industrious, moral, intelligent and useful members of society in whatever sphere of life their future should be cast.

De Fellenberg appears to have founded his educational institutions about 1799. Whether they were all commenced at the same time is not clear, but the probability is that there was a gradual development. However that may be, they comprised in 1820 the following establishments:

First—a Model Farm. This embraced the whole estate of de Fellenberg.

Second—an Experimental Farm. No particular portion of the estate was set apart for this purpose; but various sections in different parts were taken, and these totaled altogether about one-twentieth of the estate.

Third—Workshops. These were used for the construction of agricultural implements.

Fourth—Workshops; for the improvement of agricultural machinery.

Fifth—a School of Industry, for boys.

Sixth—a School of Industry, for girls.

Seventh—an Institution; for the education of children belonging to the higher classes of society.

Eighth—an Institution; dealing especially with the study of Agriculture.

Ninth—a School; for teachers.

THE SCHOOL OF INDUSTRY

It was in the School of Industry for boys that the agricultural and industrial occupations reached their brightest point of proficiency. The general rule was to admit the pupils into this school at about the age of five years, and to retain them until

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their twentieth or twenty-first year, the period at which their education was to finish. It was this continuous residence, thruout a long period, under the superintendence and guidance of the principal, which constituted one of the most distinguishing features of de Fellenberg's system. He permitted no holidays in the sense that the pupils departed for a season from the institution to their own homes, for by so doing, a severance occurred in that unity of direction, and influence which de Fellenberg considered so valuable.

Indeed, so indispensable did he believe this absolute unity to be, that the immediate direction and education of the pupils was confined to as few persons as possible. These were called "guardians" and consisted of his own children and of pupils who were fully imbued with his views and upon whose discretion, judgment, and fidelity he could implicitly rely. Thus, the greater number of the professors, of whom in 1820 there were thirty, resided in a building separate from that in which the pupils were lodged; they had little or nothing to do with the control of the pupils except during the hours set apart for their intellectual studies.

THE HIGH SCHOOL

It was not in the School of Industry only where these rules were observed. Even in the High School, the "continuity of residence," and the "unity of influence," were insisted upon, as was also the alternation of manual labor with intellectual activity. So that, in this part of the Institution as in the other, the humble but useful occupations of gardening, cabinet-making and the like were aspects of the daily routine as much as the manly exercises of fencing, gymnastics and other active sports. Pupils were only received into the High School upon the payment of fees, and were expected to remain at least until the completion of their eighteenth year.

Those at the School of Industry were the children of the poor and no fees were required. De Fellenberg believed that the poor, on establishments such as his, could provide for their own maintenance and education by their labor if that were judiciously managed.

The High School and the School of Industry therefore, had no relationship, except that of juxtaposition. They were situated on the same estate, and only separated from each other by a small portion of the grounds. But de Fellenberg in thus conducting these departments in different portions of his estate, had no intention of condemning the child of poverty to remain in that condition. He did not hesitate to promote boys of unusual talent from the lower to the higher school at his own expense, for he said, "If we desire that nothing of what Providence has granted to us, with so wise an economy, should be lost, society must possess itself of the man born in an inferior station with eminent talents and reserve for him in a higher station the place to which he is suited; otherwise this man improperly placed, would suffer in the situation in which he would be unnaturally confined, and would be kept out of that to which his superiority entitled him."

The intellectual studies varied in each school. The subjects taught in the School of Industry approximated those usually taught in an elementary school, together with the *elements of geometry* with reference to land-surveying, and *natural history* so far as it was concerned with husbandry. The syllabus of studies at the High School resembled those frequently taught at a secondary school. But in each school agricultural labor occupied a considerable portion of each day's time, says Birchenough, for "on the educative effects of a training on the land de Fellenberg set a high value, not only for its physical results, but its

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disciplinary powers, intellectually and morally."

The boys were taught the scientific principles underlying the general practice of agriculture, and were trained especially to take an intelligent and systematic observation of nature's ways and customs.

The geological structure of the earth and its connection with the growth and nutrition of plants, animal and vegetable physiology, etc., formed an important section of their studies. They were also instructed in the elements of mechanics, so that they were equipped with a knowledge of the principles upon which mechanical operations should be conducted, and with a certain amount of resourcefulness for grappling with their problems. In short, it was thruout, a training in contact with things, evoking forethought and resourcefulness.

However, the lighter side of intellectual activity was not altogether neglected, for small portions of time were spent in drawing, in the study of history, and in music, especially the singing of hymns and national songs. These tended to promote innocent enjoyment, to raise the mind and to confer both refinement in taste and simplicity of manners. The whole institution was conducted by de Fellenberg and his colleagues in a spirit of christian kindliness that had much to do with its success. Thus, "the calling forth and giving a proper direction to all the faculties with which we are endowed, the building up as it were, systematically and spontaneously the whole bodily and mental constitution, together with a watchful care over the right regulation of the moral character and conduct, were the distinguishing aims of de Fellenberg as an educationist."[1]

DE FELLENBERG'S ECOLE NORMALE

De Fellenberg was fully aware that the conditions prevailing in his institution, which, after all, was established on his own private property, could not be carried out in their entirety in neighborhoods less advantageously situated. Local circumstances might impose unsurmountable obstacles to a faithful adherence to the Hofwyl plan, but in many places a modification of the scheme might be advantageously adopted. He was also conscious that the majority of the teachers of his time would be unable to carry out his system unless they received guidance and training. In the remedy he applied, another instance is found of the practical character of de Fellenberg's mind.

He formed a plan of uniting at Hofwyl, during the summer months, all the village schoolmasters who were willing to avail themselves of the opportunity. At these meetings he propounded in a course of forty lectures his educational beliefs and thoughts concerning the best means of making the village school serve as the instrument for the instruction, the education and the improvement of the people. These meetings were held during two years, the first being limited to the schoolmasters within the canton of Berne; whilst for the second, invitations were issued to the teachers of the neighboring cantons.

The Ecole Normale as it began to be called was suppressed by the government of the canton of Berne at the end of the second year's meetings. The institution and the principle upon which it was conducted had few imitators in England. In Ireland, however, a somewhat similar establishment was set up at Templemoyle near Londonderry in 1827, and from the success attending it, several other similar institutions sprang up in different parts of that country. They were, however, for the most part boarding establishments for students of an older age than the children in attendance at the primary schools. Thus they do not relate to this series of articles.

[1]Mr. Tremenheeve, *Minutes of Committee of Council on Education*, 1843, Page 133.

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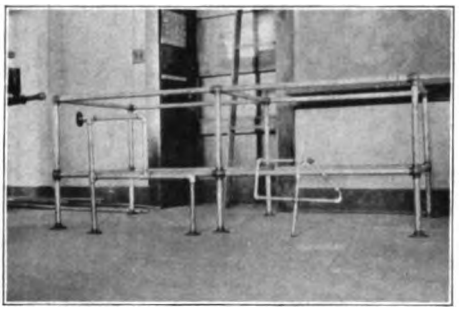
INDUSTRIAL INFORMATION COURSES IN THE JUNIOR HIGH SCHOOL

R. G. SAWYER
Supervisor of Manual Training, Jacksonville, Florida

THE junior high schools of today are becoming a great factor in our educational system, as are also the mechanical courses. Many ideas have been suggested, and many plans tried, but the



PLUMBING OR PIPE WORK, INDUSTRIAL INFORMATION COURSE

best solution for correlation has not been found.

The solution that I am suggesting (not original with me) is one that the writer has tried with a great degree of satisfaction, both to the pupils and himself. The one outstanding aim is to outline the work in such a manner that the boy will have a great fund of information along industrial lines, so that he may be able, at some later date, to intelligently select the work for which he feels best fitted.

This selection of a life work is not the only aim, but it is the most important one. The industrial aim is also of vital importance, namely, to make the boy a "Jack of all trades and a master of one when a man." These aims should be accomplished without interfering with the regular school work.

Our school work seemed best fitted for the following division of time: Four periods daily for the regular academic instruction, one period daily for the industrial work and one period daily for the special subjects. The academic periods are sixty minutes, divided so that there is a recitation and also a certain amount of supervised study under the teacher of each subject. To accomplish the best results the students should be required to take all the work as outlined.

The results to be accomplished divide themselves into two groups: (1) industrial training, (2) vocational guidance. The first group readily divides itself into three parts: (a) the student becomes a handy boy regardless of his future vocation; (b) he becomes acquainted with a great variety of materials; (c) he becomes semi-skillful in the handling of a great variety of tools. The second group readily divides into two parts: (a) industrial information given; and (b) vocational guidance opportunity.

SHEET METAL AND ELEMENTARY MACHINE SHOP WORK, INDUSTRIAL INFORMATION COURSE

This enables the boy to select his vocation with some degree of satisfaction.

The industrial work may be a group of regular problems covering a series of fundamental processes, and information, or it may be confined to problems of a practical nature made for the schools; but in either case it should cover the same ground. In case work for the schools is selected it should be done with the educational value

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always in mind, and it should be fitted into the course at the proper time.

Teachers for this type of work are available, and more thoro courses for teachers will eventually be established along these lines. In smaller schools the entire work may have to be given by one teacher, but in the larger schools each teacher should have a single shop, and be required to teach only the courses given in that shop. More thoro organization will be required at first, therefore a long teaching day should not be required.

SUGGESTED OUTLINE FOR JUNIOR HIGH SCHOOL

SEVENTH GRADE

General Notes—

1. Periods of sixty minutes, divided so there may be both recitations and supervised study.
2. Four courses to be taught in one shop by one teacher.
3. Equipment for each group to be for four pupils only.
4. The general outline for the work to be furnished thru some form of instruction sheets.
5. Each new step should be thoroly demonstrated, and followed with the necessary personal instruction.
6. The courses to be of the short unit type, suitable for nine weeks, as the groups must rotate four times each year.
7. The academic work to cover some branch of the general subject outlined.
8. The special work to cover the subjects as outlined.
9. The periods to be divided so as to make the program run smoothly.

Academic Subjects.

Four periods daily.

1. English.
2. Science.
3. Mathematics.
4. History.

Industrial Work.

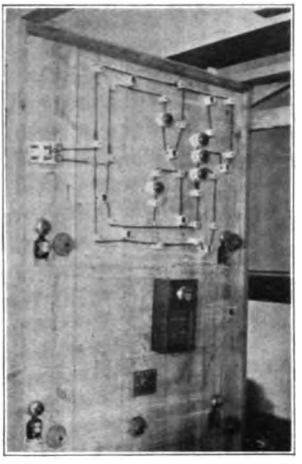
One period daily.

1. Concrete.
2. Bricklaying.
3. Carpentry.
4. Painting.

Special Subjects.

One period daily.

1. Freehand Drawing—40 min. for 3 days
2. Music —20 " " 3 "
3. Physical Education—40 " " 2 "
4. Penmanship —20 " " 2 "



ELECTRICAL WORK, INDUSTRIAL INFORMATION COURSE

EIGHTH GRADE

General Notes—

Same plan as in the seventh grade.

Academic Subjects.

Same as seventh grade only more advanced.

Industrial Work.

1. Bench Woodwork.
2. Plumbing.
3. Sheet Metalwork.
4. Electrical Work.

Special Subjects.

1. Freehand Drawing—30 min. for 2 days.
2. Music —20 " " 3 "
3. Physical Education—30 " " 2 "
4. Typewriting —40 " " 3 "

NINTH GRADE

General Notes—

Same general plan as the seventh grade. Some academic work is elective, and mechanical drawing is substituted for special subjects in the last term.

Academic Subjects.

Required:

1. English.
2. Mathematics.

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Elective: (Elect 2)
1. Science.
2. History.
3. Foreign Language.

Industrial Work.
1. Turning.
2. Forging.
3. Automobile Work.
4. Elementary Machine Shop Work.

Special Subjects.
1. Music —20 min. for 2 days.
2. Physical Education—40 " " 2 "
3. Typewriting —30 " " 3 "
4. Freehand Drawing—30 " " 3 "

Mechanical drawing last semester.

In the shops, rule and pencil drawing is stressed, but instruction is also given in blueprint reading and blackboard drawing. The only power machines used in the shops are the lathes and grinders. These short unit equipments do not require a great expenditure in normal times.

Believing that it is the duty of the school to get the boys ready to go into a life work which they can pursue successfully; but not necessarily the schools' duty to train them fully for that work, our aim for the boy's industrial experience in school might be expressed as preparation which will make the boy "A Jack of all trades and ready to become a master of one."

TEACHER TRAINING WORK FOR MACHINISTS

S. E. Austin
A Student in the Smith-Hughes Class at Lane Technical School, Chicago, Illinois

THIS class started in the fall of 1918 with about forty members, divided into two sections for convenience in presenting the work. The members are all journeyman machinists actively engaged at the trade. Many of them have had from ten to twenty-five years' practical experience; some of them being classed as die and tool makers and receiving the maximum wages paid to men of that class in Chicago.

The previous education of the members ranges from graduates of grammar schools to graduates of high schools, together with a certain amount of technical knowledge acquired in the pursuance of the trade.

The work is under the direction of the University of Illinois, the class being called together by Professor Ira S. Griffith and later directed by Assistant Professor James McKinney, both of whom are representatives of that institution. The class is in the immediate charge of Mr. Fritsch and Mr. Hoffman, two experienced teachers of technical work at Lane Technical School, who instruct the two sections of the class at alternate periods. The time used in class work consists of two hours per night for three nights per week. There is no limit to the time that could be used in preparing for the class.

It has been assumed that as the members of this class are practical machinists of a high degree of skill, that they know their trade and also know the points of the trade that should be taught to apprentices and others who desire to become competent mechanics. It is one thing to know a trade so you can do the work yourself, and quite another thing to analyze that trade and divide it into successive steps suitable to present to a person who knows nothing about the trade. Analysis of a subject of this kind is new work for the practical machinist, and it has been the endeavor of the teachers to lead these men into an analytical way of thinking. This has been done by discussions in the class room and by requiring the members of the class to write outlines of various subjects pertaining to

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the trade. These outlines are put on the board for discussion and criticism by other members of the class.

The teachers have also given us instruction in subjects which are not necessarily a part of the machinist's trade, but which help to make a more competent mechanic and are necessary to the machinist who is to become a successful teacher of his trade.

In our work in trade analysis we started out with a comparative analysis of the machinist's trade and the teacher's trade; considering the effect of character, trade knowledge, and general qualifications in each case. We then considered the principal points of difference between a commercial shop in business and a school shop conducted on a useful or productive basis. The former is run for individual profit and the latter for the instruction of the students and the benefit of the state as a whole.

Our next point of discussion was: An Ideal Course for a Student in a School Shop. This included just what a boy entering a shop should be taught first, and the proper sequence of the succeeding steps. For instance, the relative importance of benchwork and machine work; and the order in which a boy should be taught shop terms, benchwork, and the operation of the various machines. There was some differences of opinion regarding the relative importance of different subjects. From numerous outlines submitted an ideal course was determined. This discussion also touched on the subject of proper shop equipment.

We then proceeded to analyze the information to be imparted regarding each machine: the classes of work that should be done on a machine; the necessary tools which may be termed the equipment of the machine; the machinist's measuring tools and other hand tools required on this work. We then considered the trade knowledge which must be imparted to a student to enable him to operate the machine and do the work successfully. Also the amount of mathematics that might be required in setting up this work, operating the machine, and making the measurements on the various jobs. In trade drawing, an ability to read blueprints or sketches and lay out the work was considered enough for the practical operation of the machine. In each branch of the trade a certain amount of trade science is involved. For instance, in operating a lathe the operator should have some knowledge of leverage, such as a knowledge of pulleys, gears and screws; should know something about friction and the effect of lubricants; and have some knowledge of the expansive effect of heat on the metal being worked. In some instances other applications of science are involved. This work was all tabulated in outline form, which enabled the prospective teacher to get an analytical view of the information to be imparted to the student.

In our work in trade science the teacher and the members of the class were up against a more difficult proposition. Much or all of the information is contained in hand books on the trade, but the subject has never been handled in a comprehensive manner from our view-point. The individual members of the class know many of the applications of science to their daily work, but do not fully realize the relation of this knowledge to the science of physics or chemistry. The classwork has been mostly in the form of lectures by the teacher with some suggestions and specific illustrations by members of the class. The object has been to draw a comprehensive outline showing the relation of the laws of physics and chemistry to the practical problems of the machine shop. For instance, under the heading Mechanics we considered the laws of motion, simple machines, efficiency of machines, friction, work or en-

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ergy, pneumatics, and hydraulics. Under the heading Heat, we considered the expansive effect of heat on metals, heat treatment of metals, and other kindred subjects. Under the general heading Chemistry, we got the composition and manufacture of cast iron, steel, and other metals.

Another branch of trade science is the construction and use of fine measuring tools. Closely related to the chemical side of trade science is the question of industrial resources, altho the aim is to treat this subject from a geographical standpoint. This subject has brought out several interesting outlines showing the raw material required to produce an iron casting, a piece of tool steel, or an aluminum bronze casting; and incidentally the steps in the manufacture of the same.

Other outlines have been presented showing the geographical location of mines from which ores of the various metals are obtained; also showing the location of supplies of fuel and other materials used in the reduction of ores. Another interesting subject is the location of manufacturing centers as affected by the waterways and railroads used to transport these material resources to a common center. This subject of industrial resources is something new, and this class is doing pioneer work.

In trade drawing the object has been to get a comprehensive view of the subject rather than to teach the art of drawing. Outlines have been prepared by members of the class showing just what information the practical man must obtain from the shop drawing on specific jobs, whether the shop drawing is necessarily a complete blueprint or a shop sketch made by the foreman or the workman himself. Outlines have also been made suggesting the kinds of drawing necessary for presenting work of various kinds to a class of students.

In the discussion of practical shop drawings it has developed that there is no absolute uniformity in the arrangement of the orthographic views, and what was considered the best arrangement according to practical experience was adopted as a standard. This discussion also brought out the fact that mechanical drawing as taught in most of our high schools differs materially from the making of practical shop drawings and that the boy who has learned mechanical drawing at school has to relearn much of the subject in actual practice. The teacher has explained what isometric, picture, perspective and orthographic drawings are. Picture drawing is often used in making shop sketches. The orthographic or straight geometric view is the standard for sketches and blueprints in shop drawings, and we have made a few plates showing the conventional forms of representation in general use in shop drawings.

The subject of observation and methods as presented to the class consisted of an outline and series of lectures on the same by the teacher. This outline and the lectures covered many of the desirable qualifications of a teacher, and explained some of the more difficult problems the teacher comes in contact with. As explained in a statement accompanying the outline, the object was to stimulate thought on the subject of teaching rather than to establish an arbitrary guide.

During the early part of our instruction in this class the principal of Lane, Mr. Bogan, explained to a newspaper man that we were practical machinists and that what we did not know about teaching would fill a library. For what we have learned in this line we are indebted to our teachers, and they have been generous in imparting information gained by practical experience.

In the study of trade mathematics it has been the aim to give the class a review of elementary arithmetic, which some members needed; and to incorporate such prob-

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FIRST YEAR

First Term	Hours	Second Term
Analysis and Classification of Trade Knowledge, Including Detailed Study of Mathematics, Science, Drawing and English	Mon. 7:30-9:30	Analysis and Classification of Trade Knowledge
Analysis and Classification of Trade Knowledge	Tues. 7:30-9:30	Effectual Instructional Order
Analysis and Classification of Trade Knowledge	Thurs. 7:30-9:30	Methods of Teaching

SECOND YEAR

First Term	Hours	Second Term
Methods of Teaching	Mon. 7:30-9:30	Instructional Management
Methods of Teaching	Tues. 7:30-9:30	Theory and Organization of Vocational Education
Industrial Resources	Tues. 8:30-9:30	Government and Industry
Practice Teaching	Thurs. 7:30-9:30	Practice Teaching

SUMMARY OF TOTAL HOURS FOR EACH SUBJECT

Analysis and Classification of Trade Knowledge		80 hrs.
Methods of Teaching		50 "
Practice Teaching		40 "
Effectual Instructional Order		20 "
Instructional Management		20 "
Industrial Resources		10 "
Government and Industry	Point of View Largely Appreciation	10 "
Vocational Education		10 "
		240 "

Note—The above outline of the program being followed in the Smith-Hughes Teacher Training Class at Lane Technical School was furnished by Professor McKinney. While program making for this type of work is largely in the experimental stage, the principal features of the above have been found to work out very satisfactorily.

lems into the work as are met with in practical machine shop experience. The fundamental principles of algebra are being taught. The members of the class are encouraged to bring in practical problems from their shop experience, and some of these problems show the advantage of a knowledge of elementary trigonometry, such as the use of tables of natural sines and cosines and tangents.

The final subject to be mentioned in connection with our work is shop English. This is a very interesting subject, and is being developed principally along lines which will enable us to express our ideas clearly and concisely.

In conclusion, I wish to say that the Smith-Hughes Course for teachers of machine shop practice is a very valuable one to the members of the class. It is well worth the time spent for its educational value. The members of the class are qualifying as teachers as evidenced by their work, and the fact that several of them have passed the examination for teachers of machine shop practice in Chicago. We are ready to demonstrate to those in want of teachers that we can teach the machinist's trade in an acceptable manner.

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EDITORIAL REVIEW OF THE MONTH

THE WAR LESSON—INDUSTRIAL TRAINING

A SMALL pamphlet entitled "Industrial Training and Foreign Trade" has just been issued by the Training Service section of the U. S. Department of Labor. In it is set forth the argument that training (it does not use the term education) won the war and will win in the competition of peace times no less.

"German training, the product of scientific system, kept millions of enemies helpless and all but hopeless for three years. The allies had boundless wealth, vast resources of men, almost exhaustless supplies of materials, and yet these counted for little till at last training was superadded to them —training of soldiers in the field and training of workers in the factories."

A little later the writer says: "One of the chief heritages of the war is the demonstration of the value of industrial training. The nations have paid an immense price for this lesson, but it doubtless will be counted among the most useful and salutary of all that were taught in the four years of bloodshed."

"A very large sum of public and private funds was expended for industrial training in the United States in the last eighteen months. It would be sheer waste of this money if at least the value of industrial training is not recognized."

PEACE TRAINING NOT THE SAME AS WAR TRAINING

THE writer then adds, "This does not mean that there should be a continuance of the sort of training that was given under the high pressure of war when dilution of skilled labor was an imperative demand. Dilution is no longer necessary, and the attempt to develop mechanics and craftsmen from the raw material of labor is neither requisite nor advantageous. The need now is for the training of those already in industry, with the purpose of increasing their skill in their present occupations, of enlarging their versatility, and of raising the individual and collective output so that American products may be manufactured and sold in competition with those from England, France, and Germany, without cutting the employee's wages or the employer's profits. Only by production on a gigantic scale and at a small unit cost can both of these objects be accomplished."

The author then states that the average efficiency of many thousands of American workers is not above 35 per cent of a day's output, and he closes with an appeal to the employers to utilize the U. S. Training Service in increasing the efficiency of their workers.

THE SCHOOL TO COUNTERACT THE EVILS OF FACTORY TRAINING

WE CALL attention to this pamphlet because it reflects the spirit of the present moment. It connects up with war experiences and draws lessons for the future. But we have another purpose also: The teacher is likely to think because the term "industrial training" is used that the author is talking about work which should be done in the public schools. This is a mistake. The kind of industrial training referred to is training in the factory at the expense of the employer, and is intended to reduce inefficiency and speed up production. If world competition in industry is going to lead us much further in the direction of production requiring such intensive training, then not only will such training be entirely outside of the realm of public education, but the public schools will have to place more emphasis than ever on the

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kind of education that will counteract the evil effects of such intensive training and the intensive labor that follows after it.

But there is another, and a brighter side to the picture. The demand of the industries—the big as well as the small—is for more men with a knowledge of science and mathematics and materials as well as processes. This cannot be given, as the war work demonstrated, in short-time training courses. Here is where the school comes in to do its part. It takes a long time for such education to "soak in." The factory can give the training in speed and routine, and it is willing to do that and to pay for it, but to the schools must be left the task of giving the broader foundation training for industry. Whether this can be done best before entering industry, or whether the experiences in industry should parallel those in the school is, perhaps, still a question. Probably both methods of procedure will be employed for a long time to come, because each meets conditions that the other does not.

THE COOPERATIVE SCHOOL

IN THIS connection we recall another government circular recently received. This one is by Dr. William T. Bawden of the U. S. Bureau of Education and speaks very encouragingly of the results thus far obtained thru the part-time cooperative plan of industrial education. In this circular (Industrial Education Circular, No. 2, February, 1919) the advantages of the plan are summarized as follows:

1. The safeguards thrown about the young people in their places of employment, thru the supervision exercised by the school and the cooperation of employers, show an almost unbelievable improvement over the conditions hereto characterizing the employment of minors in many places.

2. The cooperative plan makes it possible for some boys and girls to continue in school, because of wages earned on half-time. Prolonging the period of active connection with the school, and of contact with sympathetic teachers and advisers, confers an incalculable benefit on growing boys and girls, and should lead to a permanent impetus to better things.

3. The plan would doubtless induce some to remain in school because the school work is thus made more interesting and the student can see a more direct relation between schooling and the promotion of his own interests.

4. The experiences involved promote a more earnest and thoughtful attitude toward work and the responsibilities of life.

5. The plan discourages idleness and unwholesome use of time, since the longer school day and year are fully occupied with interesting activities.

6. The opportunity to engage in gainful employment on half-time, under suitable auspices, has a definite prevocational value, assisting young persons to discover their tastes and probable aptitudes.

7. The successful operation of a cooperative school or class affords a convincing demonstration that a reasonable amount of work, under proper conditions, can be made to contribute definitely to the development of youth, instead of being, as frequently heretofore, a demoralizing, disheartening, and stunting influence.

8. The plan gives the student, at the very least, a foothold in some industry or occupation so that he does not feel lost when the time comes to leave school and take up the responsibilities of self-support.

9. It should be emphasized that this plan does not neglect the need for general education, but insures to each individual an amount of cultural and liberalizing education sufficient to serve as a foundation for further study if he finds it possible to continue his education—he certainly gets more of the cultural side of education than he would if he had left school entirely to go to work.

SCHOOLS NEED THE MACHINE TOOLS USED IN WAR WORK

IN OUR March number we called attention to a bill introduced in Congress by Representative Caldwell of New York which proposes that the War Department shall apportion some of its surplus machine tools, purchased for war use, to the educational institutions of the country for purposes of industrial train-

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ing. We have since learned that this proposal was made an amendment to the Army Appropriation Bill by the Senate Military Affairs Committee. Unfortunately the Army Bill has not passed, but will come up again when Congress next convenes. So far as we have learned, there is no material opposition to this movement to encourage vocational and technical education. We are told that it is favored by the War Department, the American Federation of Labor, the Directors of the U. S. Chamber of Commerce, leading engineering societies and practically all the foremost educational institutions.

The above paragraph ought to be a suggestion to every reader who realizes the value of writing to congressmen.

A LETTER FROM DR. SNEDDEN

WE ALWAYS endeavor to fairly represent any speaker we report, and we are always willing to be corrected if we do not. We are searching for the truth and trying to present it to our readers. We are therefore very glad to print the following communication from Dr. Snedden, of Teachers' College, New York City.

April 7, 1919.

To the Editor,
Manual Training Magazine,
DEAR SIR:

Your editorial comments on my part in the Chicago meeting of the Vocational Education Association of the Middle West were so appreciative and just in the main that I may seem unnecessarily critical in asking for correction of certain details.

But it is certain that the English language plays tricks on all of us and especially on the man who speaks rather than reads. Your editorial notes indicate that in one or two matters I failed to get my meaning across.

Certainly I did not intend to say that "the man with skill of hand was hardly to be considered as a factor in industrial production."

Skill of hand in ten thousand varieties, and in many cases in very exacting forms *is* required in production of course, and not less in production thru the aid of power driven machines than in handicraft production. The locomotive engineer, the girl driving an automatic stop loom, the typist, the electric welder, the girl watchmaker, the machine operatives on automobile parts, the power machine operators in the clothing industries, all require *particular* skills—some of which may be acquired by persons of proper maturity in three to six weeks of intensive training, while others may require one or more years. A farmer, a homemaker, a jack-of-all-trades, an "all-round" carpenter needs a great variety of skills—the specialized producer which the modern world demands in such numbers on farm, in shop, on ship board, in the office, and in the mine requires only a few, and these of the best, because of the intricacy and complexity of the tools he must handle.

Again I must have misexpressed myself when I gave you cause to say: "Professor Snedden would have a young man learn to run a machine and then take a job working on that machine. —Now I do *not* believe this, any more than I believe that "a boy" should study theology, astronomical research, potato growing or bookkeeping. There is danger in easy generalization, as I know too well, hence I also repudiate my alleged saying that "vocational education would thus be arranged in "a series of steps, etc."

It seems to me that experience with society teaches that *some* (not "the" or "a") boys should study theology, *some* astronomical research, and that equally *some* should learn to run machines and then take jobs working on those machines and, later, take additional training for more difficult jobs. None the less *some* boys should also study to be all round machinists or plumbers or dentists, or art handicraft workers, or designers of textiles, according to individual aptitude and interest on the one hand and social demands for such service on the other.

I wish somebody who questions my position here would explain what he proposes as vocational education for the one hundred and one operative trades involved in shoemaking; the three score in cotton textile work; the three dozen involved in either meat, fish or fruit packing; the score involved in pottery making. Are we to preserve an aristocratic and aloof attitude towards these because they are "selfish business enterprises"? Can these factories "quickly" make operators out of them (mechanics) if it needs to do so? What is the evidence? Is it likely that machine production will diminish in the United States during the next fifty years?

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While I am on this subject, I am led to wonder how Mr. Scrimshaw, assuming that he is correctly quoted, defines education? When is "training" a part of education and when is it not? If a vestibule school is not an educational institution, is a school of business penmanship, a school for aviation, a school for dancing, an officers' school at Plattsburg, a school of business Spanish, an evening school of plumbing, a farmers' short course school in poultry growing?

Are we in danger of developing an aristocracy of vocational education which distinguishes between clean and dirty, noble and ignoble, trades? Are we likely to build on the principle "to them that hath shall be given, and from them that hath not shall be taken away even that which they have"? Is vocational education to be the undemocratic privilege of the elect few, and to be denied to the industrial rank and file because they are called by the despised term "operatives"?

Very truly yours,

DAVID SNEDDEN.

As usual Dr. Snedden asks some stimulating questions. They ought to be answered. We hope that if any reader has an impulse to reply to some or all of these questions he will send such reply without delay.

WASHINGTON CORRESPONDENCE

ANNIVERSARY DINNER OF THE BUREAU OF EDUCATION

A MOST enjoyable occasion was the anniversary dinner of the Bureau of Education, on the evening of March 6th in the roof-garden dining hall of the new Interior Building. It was planned to celebrate the anniversary of the establishment of the Department of Education, now the Bureau of Education in the Department of the Interior, which occurred on March 2d, 1867. Since March 2d fell on Sunday, it was necessary to select a date later in the week, so Thursday evening, March 6th, was decided upon.

When the committee got to work on a program, it was discovered that the anniversaries of several other important events occurred in the same week. On March 3d, 1791, the District of Columbia was organized. On March 3d, 1849, the Department of the Interior was established. And, of course, March 4th has reasons of its own for being notable. There were, therefore, abundant reasons for some sort of celebration.

The committee in charge was somewhat agreeably surprised by the response to its overtures, which indicated that there was a real demand for a social function of this kind. The number of tickets sold was 210.

After the dinner a program of music, speeches, and dramatics was presented, followed by dancing. The affair was voted a great success, and the committee was informally instructed to "repeat" on some suitable occasion.

EDUCATION A NATIONAL DUTY AND RESPONSIBILITY

THERE probably never was a time in the history of the country when the people were more aroused to the importance of education. The revelations of the miltary draft, and especially the conditions with respect to lack of education, have been commented on in the magazines and newspapers in every state. The eyes of many persons, who have been wont to admit the value of education in an academic way, have been opened to the practical significance of the lack of education among a democratic people.

Because of the popular interest in the subject this is a most opportune moment for pressing the claims of well-considered and practical programs for educational reform. Among these programs, no others seem to be receiving more attention just now than those which aim at increased

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federal aid and responsibility for education.

In this connection an interview with Commissioner Claxton, published a few days ago in a Washington paper, is of more than usual interest. Probably no one in this country has given the problems of public education, and the function which the federal government should perform with reference to them, more careful study than Commissioner Claxton. As is well known, he has for years urged that the government should come to the aid of the states in the education of the children, and especially that it should assume some responsibility in seeing to it that the educational opportunities available to children in the various sections of the country are more nearly equalized.

ARBITRARY UNIFORMITY NOT DESIRABLE

THIS does not mean that children should receive the same kind of instruction in the same subjects the country over. It certainly does not mean that there should be a rigid system of national education, with a bureaucratic control centering in Washington. Dr. Claxton has repeatedly said in public that he is resolutely opposed to any such program. He is just as positive in his belief as to what a national system of education should not be as he is that one should be created. The federal government should not undertake to administer the school system of the country, nor to build and own school buildings; nor should the authority of the federal government be used to compel the attendance of children in the public schools.

The national system of education, in Dr. Claxton's opinion, should provide adequate federal aid. Half-way measures would be of no material benefit, and would result merely in the expenditure of so many millions of dollars without any appreciable improvements.

The federal government should appropriate at least $300,000,000 annually for aid in educating the children and youth of the country, and this money should be made available to the states on condition that they spend for the same purpose at least twice as much.

ADEQUATE APPROPRIATIONS WILL BRING RESULTS

ON THIS basis $900,000,000 would be expended annually for instruction. To this sum would be added probably not less than two-thirds as much more, when the construction of school and college buildings, and their extension, maintenance, and repair are taken into consideration. This means a total of approximately $1,500,000,000 annually for education. The country today is spending about $650,000,000. Under the proposed plan, therefore, the expenditures would be more than doubled. With these sums available the work of education would take on more dignity, and its real importance and significance would be more generally recognized.

FEDERAL STIMULUS AND GUIDANCE RATHER THAN CONTROL

THE function of the federal government would be to stimulate and guide education along progressive lines, rather than to control it in the sense of doing what the states and communities should do for themselves. Such control as the government would exercise would be by means of minimum standards and requirements, and would rest for its justification on the nation's need of intelligent citizens and on the federal contributions.

The states would receive this aid only when they agreed and performed the task of matching each dollar received from the federal government with two dollars of

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their own. They would receive this aid only when they enacted and enforced laws which would provide that all children must have a standard amount of schooling each year. It would probably be desirable to require that all children between the ages of six and fourteen years shall have at least eight months of schooling each year, and that those between fourteen and eighteen shall have a certain minimum of high school education each year, perhaps 480 hours.

HIGH STANDARDS FOR TEACHERS IMPERATIVE

ANOTHER condition for receiving this government aid, in Dr. Claxton's opinion, should be the establishment of high standards for teachers. Today one-half of all the school teachers in this country have not had more than a grade school education with a year of two of work in high school or normal school. Many teachers have had no more than grade school work. The low standards of education prevailing among teachers is particularly noticeable among teachers in the country schools.

VOCATIONAL EDUCATION OF PARAMOUNT IMPORTANCE

THE object of education is at least three-fold: to inculcate learning, to teach the duties of citizenship, and to enable the individual to make a living. Once the opinion prevailed, and in some quarters it still has adherents, that culture may be obtained only from the study of languages, literature, and history. This is a great mistake, according to Dr. Claxton's view. Culture comes from right living, right study, and work, and a citizen may be cultured without ever having learned Latin or Greek, or even the modern languages.

In his opinion, vocational education should be the central content in the education of the children of this country from now on. The real joy of life for Americans lies in their work, not in the leisure which the results of their labor may bring them.

NATIONAL SYSTEM OF EDUCATION SHOULD BE COMPLETE

THE national system of education, or plan for federal aid, should not stop with the grade schools, the high schools, and the normal schools, but should continue on and include the colleges and universities, where such aid is needed. The colleges and universities are the great experiment stations wherein is developed the material which is worked over into form suitable to be taught to the children in the schools. They are the centers in which the teachers for the schools and for the colleges and universities themselves are developed. It would be like tying a string around the neck of a boy and permitting his development only from the neck down, to leave the colleges and universities out of the reckoning when a national system of education is being worked out.

OTHER NATIONS AROUSED

OTHER nations have realized the need of giving more attention to the needs of public education since the beginning of the world war. Particularly is this true of Great Britain. The problem in this country will be taken up seriously in the next congress, when legislation will be strongly urged providing for liberal appropriations for this great end. It has been urged in the past, with justice, that the United States government has given more thought to the advancement of agricultural and commercial interests than to the education of the children and the future citizens of the country. It is safe to say that a readjustment with reference

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to the relative importance of these interests is now taking place in the minds of the people.

IMPORTANT PROJECTS IN PERIL

THE adjournment of Congress on March 4th, leaving a mass of unfinished business, has caused something like consternation in a number of quarters. This unpleasant state of mind results in some cases from the failure of the deficiency appropriation bills, and in others from the failure to provide for continuing certain projects in the appropriations for the ensuing fiscal year, beginning July 1st.

In the former class may be mentioned the plight of certain features of the government of the District of Columbia. Because of increased costs of labor and materials, for example, the amount estimated for keeping the streets of Washington clean for the current fiscal year has proved quite inadequate. A deficiency appropriation requested for the remainder of the year failed of passage, and as a consequence practically the entire machinery for street cleaning came to an abrupt stop early in March. The District government is prohibited by law from borrowing money and from accepting gifts or gratuitous services. The Board of Commissioners, at last reports, had not solved the problem of getting along without street sweepers until July 1st. In a city usually so well kept as Washington a situation like this is not only a serious matter for sanitary reasons, but decidedly obtrusive in an esthetic sense.

EVENING SCHOOLS SUSPENDED

A SIMILAR contingencey has seriously interfered with the regular evening classes in the public schools of the District. Some days ago the Board of Education announced that after a certain date this work would have to cease for lack of funds. The announcement aroused such a storm of protest, however, that vigorous measures were taken to provide means for keeping the evening schools open. A number of teachers volunteered to serve for one dollar, and pupils agreed to the payment of small fees in order to defray necessary expenses, so that by consolidations of small classes and reductions in number of sessions per week it has been found possible to keep a limited number of classes going at three of the high schools and five of the elementary schools.

The newspapers carried advertisements by the local electric light company offering to furnish the necessary light for all the evening schools and to wait for reimbursement until Congress takes action. Several of the large department stores, whose employes are enrolled in the evening schools in considerable numbers, offered to contribute to a fund for keeping the schools open.

EMPLOYMENT SERVICE THREATENED

ON MARCH 14th it was announced that failure of the necessary appropriations would cause a reduction of 80 per cent or more in the working personnel of the U. S. Employment Service, in the Department of Labor, on April 1st. Thus, at the Washington office, at 16th and K Streets, N.W., the force has already been reduced from 400 to about 70. The necessary executive officials are being retained, and a small force to serve as a nucleus for the hoped-for rehabilitation of the service.

BUREAU OF EDUCATION AFFECTED

CERTAIN activities of the Bureau of Education are seriously affected, chiefly by the failure of expected appropriations to provide for their continuance in the new fiscal year. Most important

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of these is the work of the U. S. School Garden Army. For the current year the Bureau had an appropriation of $7,500 for "investigation of school-directed home gardening." Last spring the President, from his emergency defense fund, allotted a sum of money with which to make a demonstration of the Bureau's plan for enlisting boys and girls in a food production campaign. The results were so favorable that the President allotted the additional sum of $200,000 for this work for the ten months ending June 30, 1919.

For the current year, therefore, the Bureau of Education has had available for this one project approximately $250,000. In the appropriation for 1919-20 the item of $7,500 in the current budget is increased to $25,000, but no provision is made for continuing the larger sum. It is worth nothing that upwards of 1,500,000 children were enrolled in the School Garden Army last season, during the six months' operations. A very conservative estimate of the value of the products of these gardens is an average of $10 per child, or a total of $15,000,000.

With adequate support there is every reason for believing that these figures could be more than doubled in 1919. Disregarding the educational values, and considering this undertaking from the financial angle alone, any school boy can figure out whether it is profitable for this country to invest $250,000 to attain these ends.

Another important piece of work jeopardized by the failure of an appropriation for the new year is that of the School Board Service Section, which was established by the Bureau of Education to assist in discovering and locating an adequate supply of teachers in the emergency due to the disproportionate opportunities for earning a living in other callings as compared with teaching, and to other causes. The provision of $25,000 allotted by the President for this purpose from his national defense fund expires by limitation on June 30th, and the Bureau's appropriation for 1919-20 contains no fund which can be used for continuing this important work. The response which has come to the Bureau's efforts to render this service indicates unmistakably that it is meeting a genuine and vital need.

Other important features of the Bureau's activities face the prospect of serious curtailment or abandonment, but discussion of these I must reserve for another time.

OFFICE OF THE FEDERAL BOARD MOVED

I NEGLECTED last month to call attention to the fact that the work and personnel of the Federal Board for Vocational Education have expanded to such an extent as to necessitate another move to more spacious quarters. During the week of February 17th the offices of the Board were moved to No. 200 New Jersey Avenue, at the corner of B Street, N.W., just opposite the Capitol grounds. There are many interesting associations connected with the building of which the Board now takes possession. Familiarly known as the Old Maltby House, it served for a number of years as the "Senate Annex."

Altho the building provides a total of 85 rooms, with five floors, basement, and attic, Secretary Aronoff tells me it is scarcely adequate for the present demands of the Board. The district office of the Vocational Rehabilitation Division for Washington remains at 606 F Street, N. W., with W. H. Magee in charge.

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IN FOREIGN COUNTRIES

A NEW INDUSTRIAL NORMAL SCHOOL IN BRAZIL

A RECENT letter from Rio de Janeiro announces that Sr. Coryntho da Fonseca, formerly director of a school in Sao Paulo, has been called to the directorship of the Wenceslau Braz Normal School of Trades and Industries in the city of Rio. This school, named for the former president of Brazil, has been established to meet the demand for teachers in the vocational schools of the nation and for teachers of manual training in the elementary schools. Senor Fonseca is already known to some of the readers of this magazine as the author of: *Comitá Nacional Brazileiro do Primeiro Congresso Americano da Creanca, Rio de Janeiro, Brazil 1917.*

The Wenceslau Braz School is the one for which a preliminary plan was secured in the United States. In the fall of 1917 the Brazilian Ambassador in Washington, Sr. Domicio da Gama, received a request from the mayor of the city of Rio, Sr. Amaro Cavalcanti, requesting him to secure in this country an organization plan for such a school. Upon the advice of the Bureau of Education the Ambassador invited Charles A. Bennett of Bradley Polytechnic Institute to prepare the plan. With the assistance of the Department of Commerce and the Bureau of Education in Washington, and the cooperation of the directors of many of the leading trade and technical schools in all sections of the United States, Mr. Bennett prepared the plan in the spring of 1918 and sent it to Brazil thru Ambassador da Gama in June. This report has just been published by The Manual Arts Press as the first of a series of brochures on industrial education.

The plan as outlined by Mr. Bennett provided for the training of (a) tradesmen, (b) technologists, (c) teachers and (d) operatives in each of six groups of trades, namely: (1) the building trades, (2) the machine trades, (3) the textile trades, (4) the printing trades, (5) the leather trades and (6) the ceramic trades. The central feature of the building scheme is an industrial museum.

All who contributed to the plan looked upon Sr. Cavalcantis' request as a most gracious compliment to the United States and a fine tribute to its achievements in industrial education. Information has not yet been received concerning the extent to which the above plan has been adopted in the organization of the new school.

TAPESTRY AS WAR MEMORIALS

IN A letter to one of the English dailies a prominent baronet, Sir George Frampton makes the suggestion that tapestry weaving would be a good occupation for returned soldiers. In his letter he points out that tapestries as war memorials, suitably designed, should find a splendid market. His letter follows:

> Many students of literature, the drama, music, architecture, painting, and sculpture, honourably disabled through the war on sea and land and in the air, will probably be unfitted to return to the art they studied and loved when they answered the call to arms. These men would gladly associate themselves with work, such as tapestry weaving, which would give congenial, remunerative, and less exacting employment than that which they practised in the time of peace. The introduction of panels of tapestry as war memorials and rolls of honour, to hang in churches, in halls of universities, public schools, and public corporations, as well as in private houses, would not only be valuable historical records in the future, but they could be lent and publicly exhibited from time to time to inspire patriotism throughout the Empire. If the idea meets with a sympathetic and tangible response, training centres for tapestry weaving under the best masters, and studios with looms, silk and wool, and other

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materials will be established as soon as a sufficient number of orders for work are given or promised, so that employment and the building up of a sound and solid foundation for the continuance and future welfare of the workshops shall be ensured.

It is intended that the artists and artist-craftsmen engaged in production, whatever their position, shall participate in the proceeds after all legitimate claims have been discharged. Several families might like to combine, if they had the opportunity, to present to an institution a memorial panel of tapestry containing the names of their sons, their escutcheons, together with symbolical figures commemorating the deeds of their heroes on the field of battle. Such memorials in our schools would encourage the youth of this and future generations to emulate the splendid sterling virtues of the old boys who so bravely fought in the great war, and no better or more lasting tribute could be paid to their glorious memory than a beautiful panel of tapestry conceived and made by the comrades of those men who fell for the honour of King and country.

Only the finest designs and perfect weaving are contemplated, work that shall be equal to and rival the most beautiful tapestries of the past, and to attain this end several of our most distinguished artists, George Clausen, R.A., Charles Sims, R.A., and Frank Brangwyn, R.A., have most generously acceded to the invitation to be connected with the scheme. This speaks eloquently for its future.

—*Canadian Woodworker.*

VOCATIONAL RE-EDUCATION IN ITALY

IN Italy the vocational re-education of soldiers is reported to have reached a high degree of efficiency.

The patients, when their wounds are healed, are moved to second-grade concentration hospitals, where physical and orthopedic treatment is completed. The men then are encouraged to attend the local schools or employ themselves in workshops. Thus they are made ready for the schools of re-education.

Although re-education is not compulsory in Italy, every indigent disabled man is required to spend 15 days in the re-educational schools and thus is made fully to realize the opportunities open.

It is the Italian principle that a man ought to be retained if possible in the trade in which he was engaged before the war, or in a similar one. Most of the men, for example, were agricultural laborers, and they are encouraged not to try to branch out into other lines. The trades generally taught include, however, shoemaking, tailoring, saddlery, carpentering, general mechanics, cabinet making, bookbinding, basket making, the wheelwright, and cooper trades, bookkeeping, typewriting, drawing and telegraphy.

WAR TOYS IN THE IMPERIAL MUSEUM

MORE than 500 children's toys have been collected and placed in the Imperial War Museum in London, where they will be kept packed away until more display space is available. The idea behind the collection is that children living under war conditions change their play to reflect the happenings around them, and therefore in years to come the toys of this war period will have a peculiar historic interest. Most of the toys collected are of British origin, tho some are from the countries of the Allies and neutrals, and a few from enemy countries. Dolls are a feature of the collection. English war dolls represent well-known people—the King, Sir Douglas Haig, Lord French, and Marshall Joffre. "Mr. Asquith as Dante and Mr. Balfour as King Canute are wonderfully clever." "The French dolls are charming." Of course there are U-boats and German guns, and Allied guns of all kinds, and tin soldiers of many nationalities.

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SHOP NOTES AND PROBLEMS

ALBERT F. SIEPERT, Editor

HOME KIT

The following projects are problems requiring careful and accurate work on the part of the boys. They are useful and show the boys that many things can be made with tools and material found in the majority of our homes, and they require very few, if any, parts purchased from the store. It is my hope that in making them, they will learn to depend more on themselves and their resources for their individual needs.

If these four projects are to be made in the order of their difficulty, the file handles should be the first problem to attempt.

FILE HANDLES

File handles should be made of good straight grained oak, hickory, or maple. We have the boys cut them out of ⅞″ stock already surfaced on two sides. We emphasize the advisability of cutting the pieces just 11¼″ long and square on each end, thereby eliminating the need of blocking the ends afterwards. After the four sides are squared, diagonals are marked with a pencil on each end, and two parallel marks ¼″ apart are squared around the piece half-way between the ends, as is indicated on the drawing. The remaining processes are apparent from the drawing. Hard oil, varnish, or shellac may be used for finishing.

MALLET

The mallet should be made of very hard wood such as ligum-vitae, hickory, honey locust, maple, or oak. A very satisfactory handle can be made of hickory. You will notice that the handle can be cut from ⅞″ stock and easily shaped. A saw cut about 1″ in length should be made in end of handle, after it is fitted, for the wedge. This tool may be oiled or varnished, as preferred.

GAGE

This problem calls for accurate work, yet it can be well done by boys of the eighth grade. Care should be taken to have the square rod or stem of constant size. It is undoubtedly the best practice to make the head first, being careful to get an accurate and square hole thru it. The rod should be fitted to this square hole with considerable pains, else there will be too much play between parts when finished. The slot for the key is tapered from ⅛″ on one side of head to 3/16″ on the other, as shown on the detail of the key. The key should be made last. A cut is made in the end of the rod with a back saw, and a sharpened 4d. brad inserted as a point. A screw thru the saw cut holds the nail in place. A set screw may also be put in the opposite end of rod to keep the head and key from slipping off.

TOOL CHEST

We encourage the boys to make this chest out of dry goods boxes when possible, but the hard wood should be avoided as it splits too easily and is generally cross grained and otherwise difficult to work. The corners of chest shown in drawing are made with common butt joints, but a rabbet joint is better. No specifications are made for the tills or drawers. However, the upper one should slide on a ledge at each end, to allow easy access to lower till or to the bottom of chest. The lower till is as much shorter than the upper one as the joint thickness of the two ledges upon which the upper one slides, in order to allow the bottom one to be easily taken out.

The secret lock appeals strongly to the average boy. It should be made of ½″ hard, fine-grain wood. The long dash line on the drawing represents the meeting line of cover and chest proper. A ¼″ dowel is driven into cover at a point ½″ above the bottom edge of the cover, and centrally between the ends. This dowel projects ½″. When the cover is down the catch flips over this dowel and holds it down. The catch part is hinged on a screw near its lower end and further held in place by a wooden spring, made of hickory if possible, on one side and on the other side by a nail as a stop. A wire is loosely wound around a screw near the center of the catch and carried along the front side of chest (inside of course) and thru a small hole in right end just under the upper molding, and a trouser button fastened to the end. This completes the secret lock. It requires but a pull on the button to unlock; and simply closing the cover down locks chest.

L. S. GREENE,
State Normal School,
New Paltz, N. Y.

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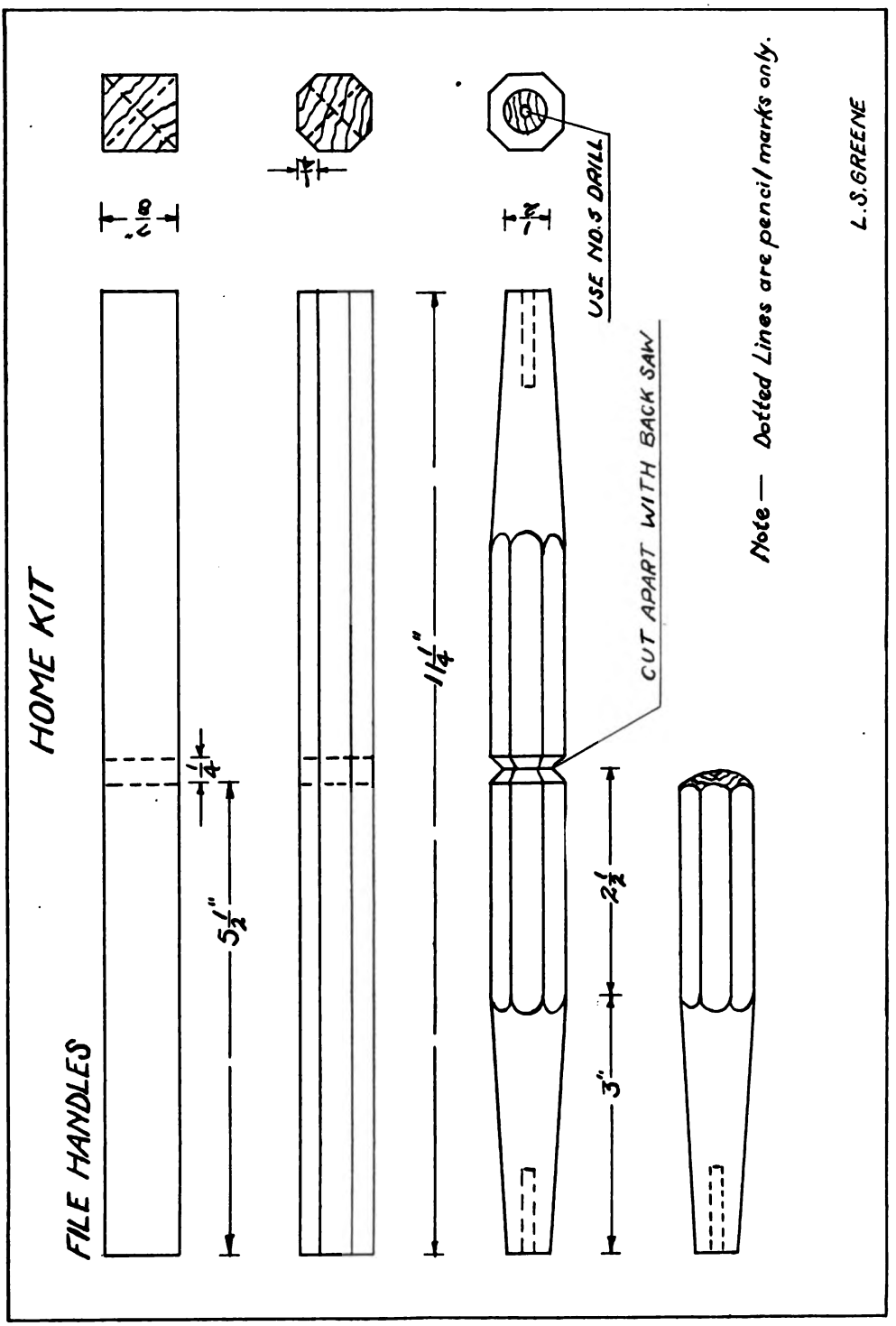

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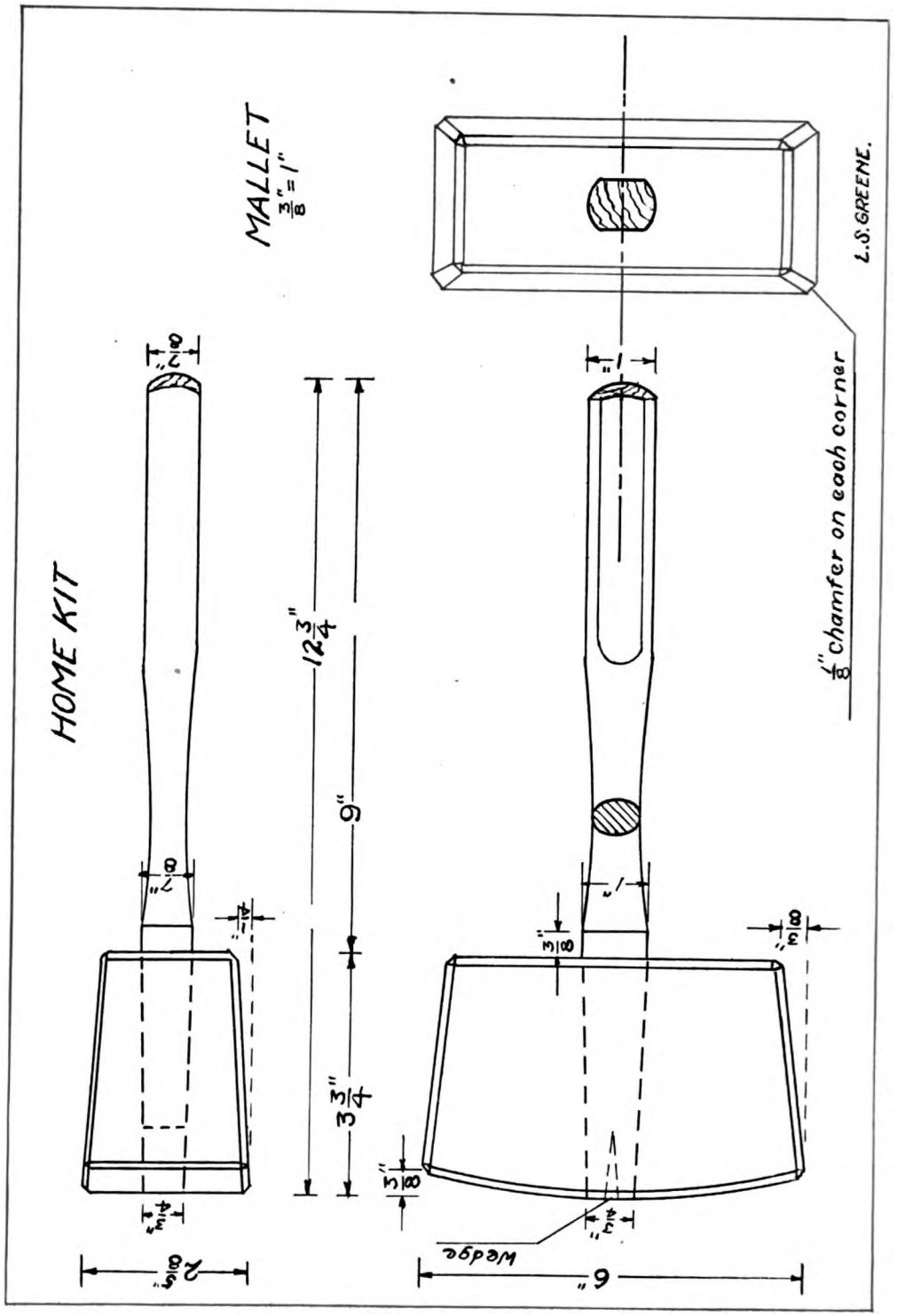

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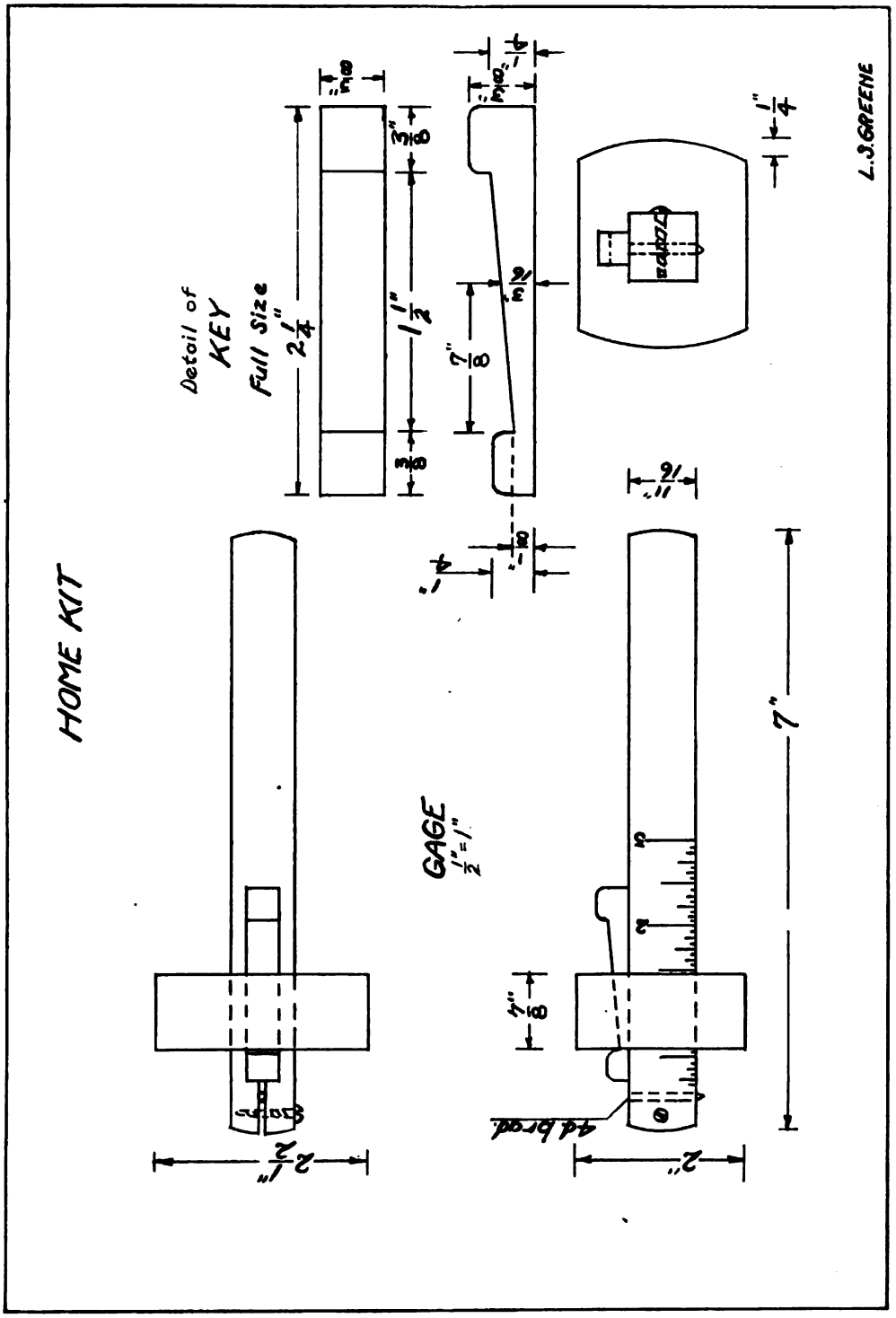
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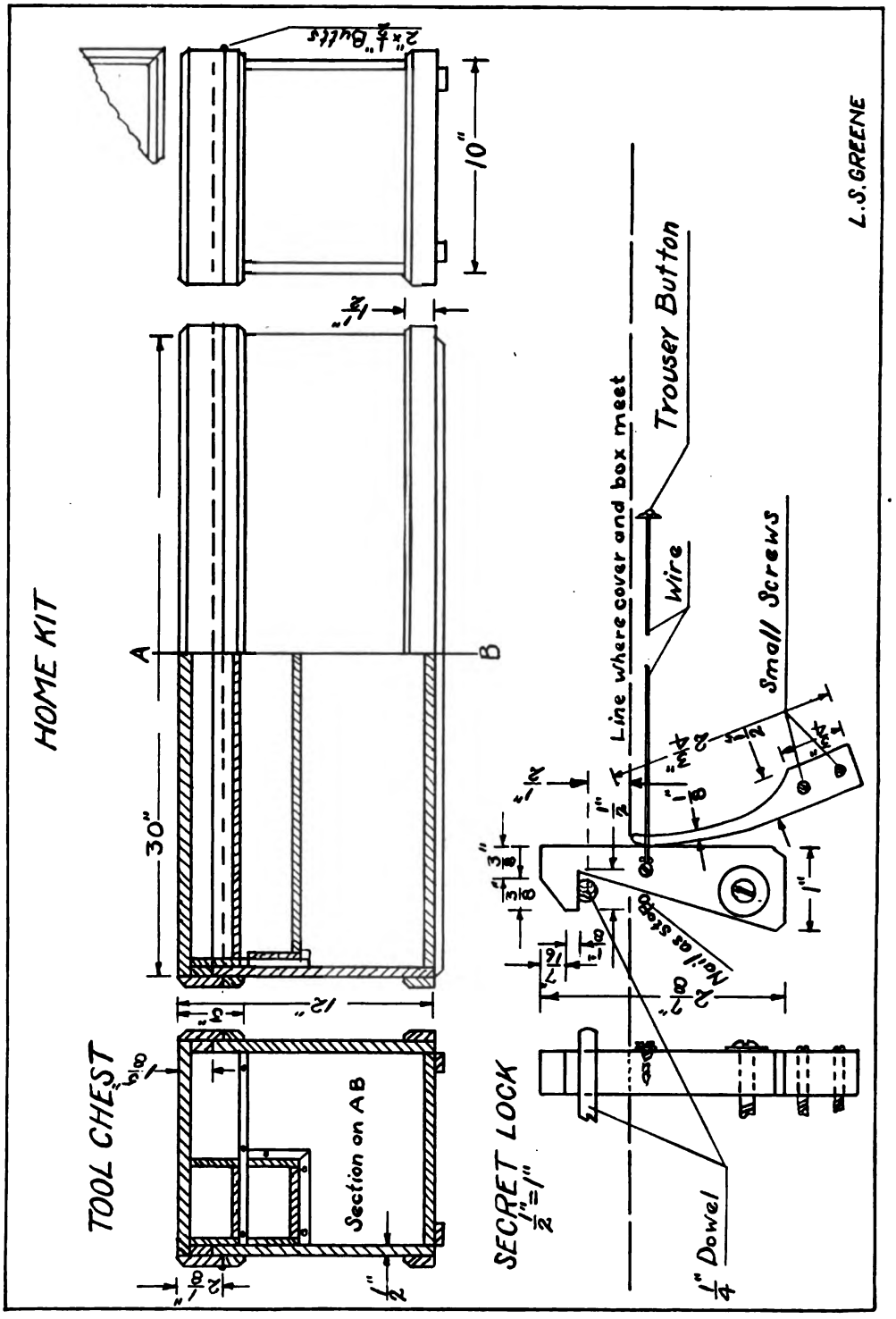

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CURRENT PUBLICATIONS

Machine Shop Practice, by William B. Hartman. Published by D. Appleton and Company, New York. Size 4½ x 6⅝ in.; 247 pages; price, $1.10.

The purpose of this book is to set forth the elementary principles of machine shop practice. It is intended for high school students and apprentices, and is written in a simple, straightforward manner so that it is readily understood by one not yet versed in the technic of machine shop practice.

The book carries one thru the hand processes of chipping, filing, and scraping, and then takes up the fundamental machine tools in the following order: drill press, lathe, planer and shaper, boring mill, and milling machine. The construction and operation of the automobile is explained in the same simple manner in the last chapter.

Shop Work, by Herman F. Rush and Claud Carlton Conway. Published by the Industrial Book and Equipment Co. Indianapolis, Ind. Size 5¾ x 9 in.; 202 pages; price, $1.20.

The striking feature of this book is the great variety of subject-matter. The first part treats of tools and machinery. Brief descriptions and proper methods of use are followed by talks on sharpening, general treatment of the tools, etc.

Under shopwork, the various joints, cabinet making and furniture construction, and rough and finish carpentry are considered. These are illustrated with sketches.

Lumbering, tree study, period furniture, and wood finishing, together with other correlated work, are touched on. To include all these phases of woodwork the treatment of each is necessarily limited.

Educational Handwork or Manual Training, by Alfred H Jenkins. For sale in the United States by Warwick and York, Inc., Baltimore. Size 4¾ x 6¾ in.; 229 pages; price, 90 cents.

This is an English publication. The author has incorporated into the book a number of courses of study, namely: clay modeling, weaving, paper and cardboard construction, woodwork, bench metalwork, and forging. These various courses cover the handwork instruction for children from seven to fifteen years. The courses are intended as suggestions rather than to be taken as a whole.

For teachers, the text is subject-matter rather than methods. The bench notes are for the students. They indicate proper procedure and processes in making the problems. In its scope the book takes in the different forms of handwork commonly practiced in the English schools.

Applied Mechanics, Vol. II, Strength of Materials. By Charles E. Fuller and William A. Johnston. Published by John Wiley and Sons, Inc., 432 Fourth Ave., New York City. Size 5¾ x 9 in.; 556 pages; price, $3.75 net.

This book is intended for college and university students. It covers comprehensively the necessary fundamentals of the subject preceding subsequent work of structural and machine design. Calculus, statics and dynamics, centers of gravity, and moments of inertia are necessary prerequisites. There is a logical development, and graphic methods are employed. Problems are included, and solutions are given in detail where they are an aid to clearer understanding.

Science of Plant Life, by Edgar Nelson Transeau. Published by the World Book Co., Yonkers-on-Hudson, New York. Size 5¼ x 7⅜ in.; 336 pages; price, $1.48.

The author in this book gets away from botany which is cultural and nothing more. The fundamental aim is to give the student an understanding of the plant as it lives. Laboratory and field work and practical problems are stressed. Here botany is not restricted to the flowers, but is made the basis for the arts and sciences relating to plant production, as in agriculture and forestry. The book is intended for high school students.

Food Saving and Sharing. Prepared under the direction of the United States Food Administration, in cooperation with the Department of Agriculture and Bureau of Education. Published by Doubleday, Page & Co., Garden City, N. Y. Size, 5¼ x 7¾ in.; 102 pp.; price, 24 cents.

The National Education Association, at its annual meeting, July, 1918, adopted a resolution calling upon the United States Food Administration to "prepare in a form suitable for use in public schools, and particularly in the upper grades, lessons and material supplementary to existing courses, which will promote the program of food conservation." In response to this request this little book has been prepared. It was written by recognized leaders in home economics and agriculture, and has been used and approved by H. C. Sherman, professor of food

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chemistry at Columbia University. Its use will enable American children to contribute intelligently to the success of the government food campaign.

Joseph Pennell's Liberty Loan Poster. With an Introduction on "The Poster" by the artist. Published by J. B. Lippincott Company, Philadelphia. Size, 7¼ x 10 in.; 9 illustrations; price, $1.00.

One of the most effective Liberty Loan Posters was the one produced by Joseph Pennell, and in this book he describes and shows by the illustrations how it was made. The author contrasts methods of poster making in this country with those in countries where the artist not only designs the poster and makes the drawing but also carries it thru the lithographic processes. Mr. Pennell makes a plea for a much-needed national school of industrial art in our own country. He says: "This is as necessary for the art of America, as West Point for the art of war." Artists, amateurs, teachers, printers, and the general public will find the book very interesting.

A CORRECTION

In our April issue an error was made in the price of two booklets, *Elementary Machine Shop Practice* and *Elementary Lathe Practice,* by T. J. Palmateer. These booklets are not sold separately. The price of the two is 75 cents, and in lots of ten or more 50 cents per set. They are published by the author at Stanford University, California.

RECEIVED

Instruction in Printing in Public Schools. Published by the United Typothetae of America, 608 South Dearborn St., Chicago, Ill. In this pamphlet is included the recommendations of the Committee on Education, which were passed as a resolution at the Thirty-second Annual Convention, Cincinnati, September, 1918.

An Outline for a Course in Concrete, by Henry Giese. Published by the Department of Engineering Extension, Iowa State College, Ames, Iowa.

Ungraded, for January, 1919. Published by the Ungraded Teachers' Association of New York City, 500 Park Ave., New York. This is a magazine devoted to the study of the problems of the mentally defective.

Course of Study for Elementary Grades, Domestic Art, Science, and Manual Training. By Grace P. Gillett, Edna Groves, and Fred M. Groshong. Published by School District No. 1, Portland, Oregon.

Opportunity Monographs, Vocational Rehabilitation Series. Published by the Federal Board for Vocational Education, Washington, D. C. No. 5—Army Occupations as Preparation for Civilian Employment; No. 6—Safety and Fire Protection Engineering; No. 7—The Metal Trades; No. 8—Factory Woodworking Trades; No. 9—Oxy-acetylene Welding; No. 10—Forestry Pursuits; No. 11—Automobile Maintenance and Repair; No. 12—Employment Management; No. 13—Concrrete Construction and Cement Manufacture; No. 14—Electrical Employments with Utilities Companies; No. 15—Electrical Construction, Maintenance, and Repair Occupations; No. 16—The Law as a Vocation; No. 17—The Practice of Medicine as a Vocation.

American Agricultural Colleges. Bulletin, 1918, No. 29. Published by the U. S. Bureau of Education, Washington, D. C. A study of their organization and their requirements for admission and graduation.

Annual Report of the General Education Board 1917-18. Published by the General Education Board, 61 Broadway, New York City. Contains brief reviews of work accomplished in several fields of education, and upon a number of problems confronting education.

Second Annual Report of the Federal Board for Vocational Education. Published by The Federal Board for Vocational Education, Washington, D. C. Contains much valuable data.

Iowa Vocational Education, Bulletin No. 2. Issued by Iowa State Board for Vocational Education, Des Moines, Iowa. Contains approved plans of the state for vocational education.

First Biennial Report of the Iowa State Board for Vocational Education. Issued by the State Board for Vocational Education, Des Moines, Iowa.

Vocational Guidance in Secondary Education, Bulletin, 1918, No. 19. Published by the Bureau of Education, Washington, D. C. This is a report of the commission on the reorganization of secondary education appointed by the National Education Association.

School and Home. Published by The Parents and Teachers Association, Ethical Culture School, New York City.

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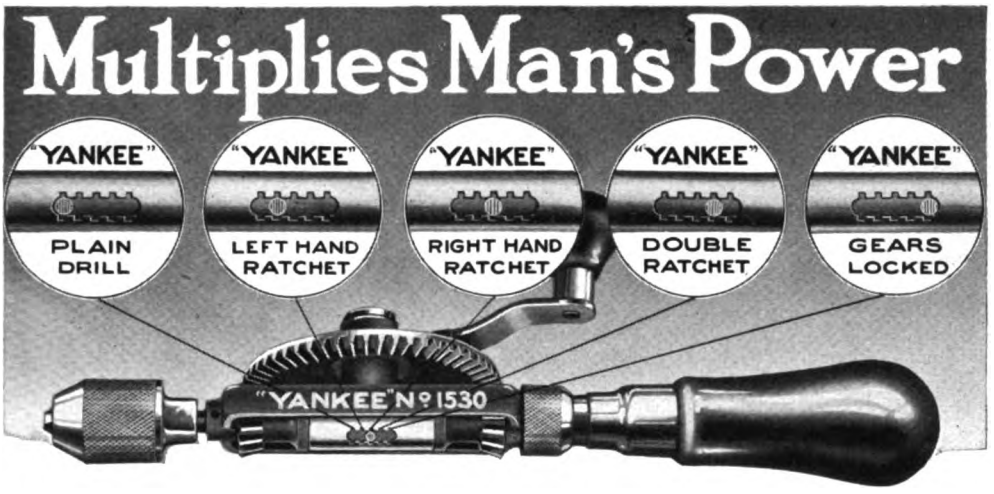
Multiplies Man's Power



IN practical shop and repair work, you will frequently lose an hour getting a five minute job where you can reach it with a common drill.

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4. DOUBLE RATCHET.
5. GEARS LOCKED.

No similar tool has these adjustments. No matter how close the corner, if you can move the crank at all, you can drill the hole. The "YANKEE" Double Ratchet Adjustment gives the drill a continuous forward movement, no matter how little or which way the crank is moved.

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has a chuck that will hold round as well as bit stock shanks—a ratchet that's boxed and protected against dust and a ball-bearing head to minimize thrust friction.

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MILLERS FALLS TOOLS

FIELD NOTES

(*Continued from p. X.*)

have been preceded by England, France, and Italy. Can we longer delay action on such an important matter?

We feel that the bill should have the loyal support of all who have at heart the progress of education, and we therefore respectfully urge that you give this matter your most thoughtful consideration. Respectfully,

Executive Committee.
—GEORGE M. MORRIS.

DETROIT MANUAL TRAINING CLUB FROLIC AND FEED

"All work and no play—" applies to shop and drawing teachers, too! Sixty-five of the Detroit manual training men demonstrated to their own satisfaction that a little sport together is a mighty good tonic. After the "West Side" men had proved their superiority in basketball over the "East Side" men in the Cass Tech gymnasium and the high school men had walloped the "graders" in a fast game of indoor baseball, the married men proceeded to top the score in a lively round of volley ball with the single men. Other pastimes were indulged in by those who did not aspire to fame in the athletic world.

After working up a good appetite, the company headed for the lunch room. The dinner over, Mr. Searles of the Henry Ford Trade School gave an interesting description of the aims and methods of that school. Among the outstanding features of the school are the following:

(a) The school is a self supporting institution, located at the plant of the Ford Motor Co., the expenses of the school being covered by the returns from the productive work performed by the students for the Ford Co. as a part of the regular training.

(b) Number of students enrolled at present, 200.

(c) Number of applications on file, about 1000.

(d) Preference, in enrolling new students, is given to those boys who need help. Seventy percent of the boys are fatherless and are helping to support dependents.

(*Continued on p. XVI.*)

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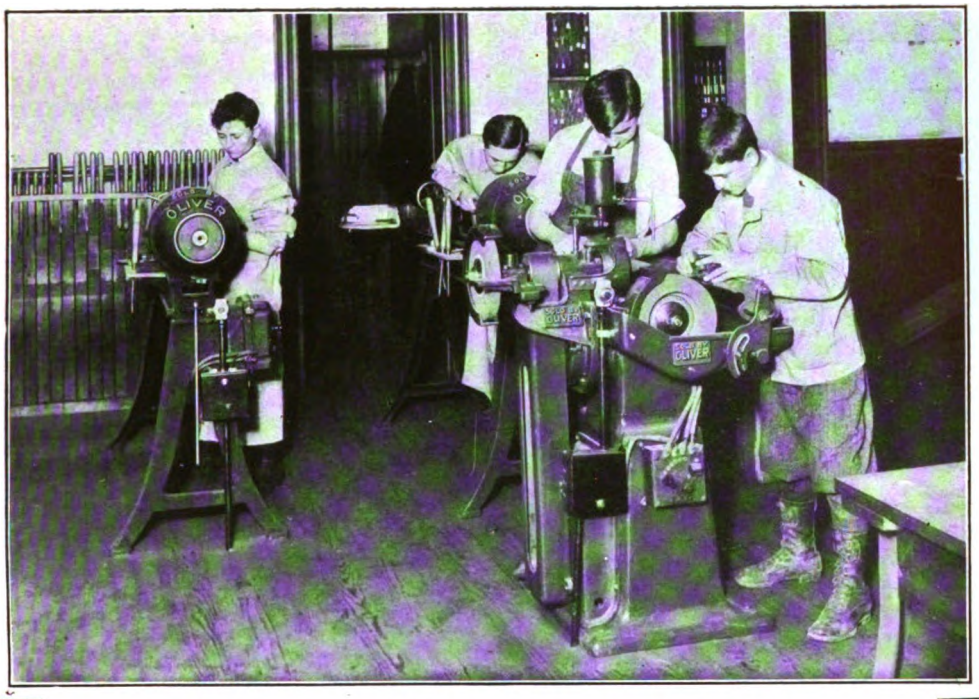

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"Oliver Quality"

Is Known the World Over

Perley L. Howe, President The Kamehameha Schools, Honolulu, Hawaii, writes to Oliver Machinery Co.:

"Your No. 61 Four Roll Single Cylinder Surfacer is meeting the need of the woodworking department of our school and we find that it is doing all that was claimed for it in your specifications. The Revolving Oilstone Grinder is also meeting our needs."

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USE "OLIVER" TOOLS

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YOU SHOULD OWN

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FIELD NOTES

(*Continued from p. XIV.*)

(e) Educational requirements for entrance, none. One boy in the school could not spell his own name when he entered the school.

(f) Age for entrance, 14 to 18 years.

(g) Time of graduation from school, when boy is 18 years or over. (No one can go onto regular production work in the factory until he is 18 years old.)

(h) Time spent each day, 8 hours, 4 on Saturday. Student alternates between school and shop—one week in school followed by two weeks in the shop.

(i) Nature of shop work, all productive (no exercise work). Eighty per cent of shop work is for tool room and 20 per cent on regular production for the Ford Motor Co.

(j) Academic studies: Mathematics, English, science, commercial geography and hygiene. Mechanical drawing is also taught.

(k) Scholarships: The school gives a beginner eight dollars a week or four hundred dollars a year, and increases the rate to a maximum of twelve dollars a week, or six hundred a year.

Mr. Searles also described a plan by which thrift is encouraged among the boys. A bonus of one dollar a week is given each boy who shows an equal amount deposited weekly in a savings account.

E. Lewis Hayes, head of the mechanical department at the Cass Technical High School, was the next speaker, his subject being "How the Educational Needs of Employes are Satisfied by (1) Corporation Trade Schools, (2) Vestibule Schools and (3) Public Industrial and Part Time Schools." Mr. Hayes is well qualified to talk on this subject as he has been in very close contact with these problems not only in his present position but also during the later part of the war as Director of Industrial Education, Bureau of Aircraft Production, Detroit District. In connection with the "vestibule schools" Mr. Hayes pointed out that it was largely the excessive war-time demand for machine operators which lead many manufacturers to introduce a preliminary training period for workers, and that now since the demand is decreased there is a decline in the attention which is being given to this kind of training.

—H. R. Jenney.

(*Continued on p. XVIII.*)

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Now for Reconstruction

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KEYSTONE SAW, TOOL, STEEL AND FILE WORKS
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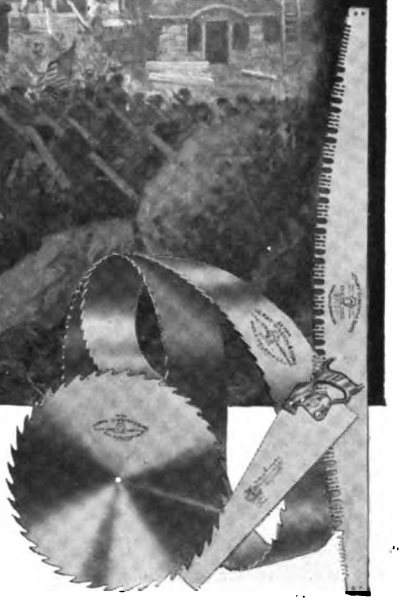

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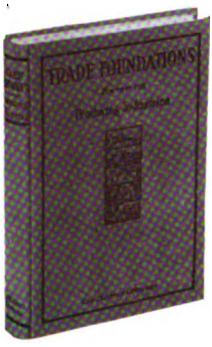
TWO STATEMENTS ON TWO NEW TEXTBOOKS

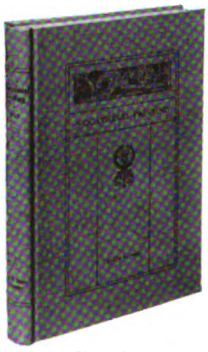


Dr. F. G. Bonser, Columbia University:

"I thank you for the copy of 'Trade Foundations based on Producing Industries,' which I have received and have examined with much interest. I am sure this book will meet with a generally favorable reception, as it meets a need which is very definite. Its material is very well organized and it seems to be highly accurate. The names associated with each section are sufficient to give assurance that it is practical. A wide-spread interest in the study of occupations both with reference to vocational guidance and for the uses of the information in the vocations themselves make the book appropriate for the work of both the junior and senior high schools. It contains much also that will be of value in connection with vocational schools apart from the regular secondary schools. I shall take pleasure in recommending this book to students and teachers, as a very substantial help in their work."

25 authors, 544 pages 6x9, 619 illustrations, good paper, readable type, paragraphs numbered for convenient use, very complex index with cross references, substantially bound in cloth. List $1.25.

For Your Shop—Large mounted cut of "The Boy on the Fence" will be sent free on request to Directors of Industrial Work.



The Inland Printer, March, 1919:

"Rapid strides have been made during the past few years toward efficiency in school instruction in the printing art. Co-ordinated action has not been evident in the methods employed, and the lack of properly prepared and graded textbooks for the guidance of the instructors has likewise placed a severe handicap upon the efforts of those who have taken up the work of teaching printing in school shops and classrooms. Happily, the instructors have formed associations for the purpose of exchanging views and establishing workable and practical courses of study.

"In 'Vocational Printing' the Guy M. Jones Company, educational publishers, Indianapolis, Indiana, has brought out a book which should prove helpful, in that it provides a very good textbook for school and shop instruction work. The volume is by Ralph W. Polk, director of vocational instruction in the city schools of St. Joseph, Missouri, a man of exceptional experience in the mechanical and administrative sides of the trade. It is written in a simple, understandable style, and, while condensed, as it should be, it is broad in scope and logically arranged in proper sequence of trade development. The attention given to the fundamentals of design in relation to printing, a most important feature in the training of young printers, is a commendable feature of the work.

"The book is designed as a textbook for any school offering printing, and has sufficient work for two years, allowing two periods for each day. Each section embodies material for one semester. The underlying purpose of the text is to present the subject of printing, and it is not merely a series of exercises but a practical guide for actual work.

"The volume contains 243 pages and is attractively and substantially bound in green cloth. Thruout, the text is illustrated with pictures, diagrams and specimens of correct and incorrect forms of typography which aid materially in clarifying the text." List $1.25.

GUY M. JONES COMPANY
Educational Publishers
Merchants Bank Building **INDIANAPOLIS**

FIELD NOTES

(*Continued from p. XVI.*)

MEETING OF PRINTING TEACHERS

The Convention of the Eastern Arts Association was held in Hotel McAlpin, New York, on April 17, 18 and 19, 1919. The sectional meeting devoted to printing met at 9:30 P. M. on the 18th.

At this meeting John Clyde Oswald, Editor of the American Printer, spoke on: "Qualities That Should be Found in a Boy Coming from the Public School Print Shop." Harry L. Gage, of Carnegie Institute of Technology, Pittsburgh, Pa., gave an address, illustrated with slides, on: "Design in Printing." Following each address time was given for discussion. These men are eminently fitted to speak authoritatively and no printing teacher could afford to miss these addresses.

This meeting was especially advantageous and instructive to printing teachers, not only on account of the prominent speakers secured, but because it afforded practically the only opportunity of meeting teachers of other industrial arts subjects, as well as printing, from the eastern states. Also, the general session speakers gave information of recent developments in this branch of education that are necessary to the development of any teacher.

R. A. Loomis, of Dickinson High School, Jersey City, was chairman of the sectional meeting.

SHIPYARD CLASSES IN BALTIMORE

Further information concerning the shipyard classes recently organized in Baltimore has been received from L. A. Emerson, supervisor of industrial education in Baltimore. Mr. Emerson says:

"The classes have been made possible by a joint arrangement of the United States Shipping Board, the Board of School Commissioners of Baltimore, and the State Department of Education. The Shipping Board furnished the materials for instruction, the Baltimore School Board has paid the teachers' salaries with the assistance of Federal funds, and the State Department has aided in establishing the classes thru

(*Continued on p. XX.*)

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THE STOUT INSTITUTE

SUMMER SESSION

July 28—August 29, 1919

A special feature of the summer session will be the courses for directors and teachers of vocational schools receiving state and federal aid.

Vocational Education - - -	**4 professional courses** **15 shop courses**

The following groups of courses are also offered:

Industrial Arts - - - -	**22 courses**
Household Arts - - - -	**15 courses**
Third and Fourth Year's Work	**7 courses**
Physical Training - - - -	**3 courses**

These courses are offered for supervisors and teachers of Industrial Arts and of Household Arts; for dietitians, and for managers of cafeterias, lunch rooms, and institutional housekeeping; for students, or teachers wishing to take advanced work for the B. S. degree in Industrial Arts or Household Arts; for athletic coaches and others interested in athletic games and swimming. Credit on two year diploma courses or four year degree courses given for summer session work.

Announcement ready April 15. Catalog for regular annual session ready now. For either, address

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JUNE 30 TO
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ALL ART COURSES
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SUMMER SESSION

June 23 to July 26

Automobile Mechanics
Architectural Drawing
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Also college courses in Cooking, Dress Design, Dressmaking, Food and Dietetics, Advanced Nutrition, Sewing, Education, English, History, Mathematics and Science.

All courses receive full credit which may be applied towards diplomas or the B. S. Degree.

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Bradley Polytechnic Institute
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A pencil that suits to a T

The harder grades mark clear, clean and without catch or scratch. That's because the leads are absolutely gritless. The softer grades are smooth, easy-flowing, responsive and withal remarkably smudgeless.

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"the master drawing pencil"

is the tool of efficiency for every kind of technical work. "A real American achievement" it has been called by many who never thought a pencil of such quality could be made in this country.

Write us now on your letter head, stating the degrees you usually use and your dealer's name and we will send you full-length samples free.

Joseph Dixon Crucible Company

Established 1827

Dept. 19-J, JERSEY CITY, N. J.

TRADE NOTES

(*Continued from p. XVIII.*)

advertising and the personal services of the industrial supervisor.

"The subjects taught are elementary blueprint reading, steel ship blueprint reading, blueprint reading for machinists, blueprint reading for pipeshop men, and shipfitting (moldloft work). The men were enrolled by advertising in the yards of the Bethlehem Shipbuilding Company and the Baltimore Dry Dock Company. The initial enrollment was about 250; approximately 400 men have enrolled to date. Classes are held two evenings a week, meeting in the Baltimore Polytechnic Institute, Baltimore City College, and the Carroll Vocational School. Instructors of these classes are practical shipyard men, and include several draftsmen, foremen, quartermen, and one safety engineer."

TRACTOR WORK FOR HIGH SCHOOL STUDENTS

The training of high school students for tractor work has been taken hold of vigorously in California. Under Dr. E. R. Snyder, Commissioner of Vocational and Industrial Education, the War Emergency Department made a survey of the State of California to determine what emergency problems could be met through the schools. Various problems were handled by this department, but the question of training men in tractioneering loomed large in every aspect.

A meeting of all tractor manufacturers of the State was called at the state capitol, with the Board of Control and the Department of Industrial and Vocational Education, at which the tractor manufacturers pledged themselves to loan the State Board of Control and the State Board of Education about $60,000 worth of tractors and farm machinery to be used in this educational work. Thirty-six towns were selected as centers. Being a community educational problem, it is being worked out with the cooperation of the high school principal in each town and the local board of education, the high school principal acting as director of training. The school authorities solicited the cooperation of local chambers of commerce, farm bureaus and all organizations representative of the district.

(*Continued on p. XXI.*)

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FIELD NOTES

(*Continued from p. XX.*)

The industrial arts teachers of Sioux City, Iowa, have formed a club known as the Industrial Arts Club. At present the club represents the shop, drafting, auto repair, and printing departments of the high school, and the industrial department in the grades and junior high high schools. They meet twice a month to discuss questions of common interest. A chairman has been appointed to see to it that something of interest is ready for every meeting. Such an organization was felt desirable for holding the departments together better. A. L. Pratt is secretary.

The eighth annual report of the School Art League, New York City, has just been received. Certainly much credit is due the League for its accomplishments in the midst of war. The lecture system and docent work have been kept up thruout the past year, thus helping thousands of young people. The organization is doing excellent work also in its scholarship system. Nearly a score of talented pupils are being aided in order that they may remain in school for a year of industrial art post-graduate study.

The Philadelphia Trade School has merged with the Central High School under a plan approved by the Board of Education. It is proposed eventually to have an extensive trade course in all the high schools. The merger will affect about 700 pupils. The Philadelphia Trade School was established in October, 1906, and was one of the first public institutions of its type in America.

To divert criminal tendencies into productive channels is the modern method of reform, and even an incendiary may put his "talent" to some practical use, according to Dr. H. H. Goddard, superintendent of the Ohio Bureau of Juvenile Research. He says that this class are often mentally defective and like fire so well that they are perfectly contented if made firemen or furnace tenders, under supervision, where they can realize their "ambition." Defectives with a mania for thieving often are satisfied if placed

(*Continued on p. XXII.*)

Vocational Texts

Elementary Practical Mechanics

By Joseph M. Jameson, Vice President, Girard College, formerly Head of the Department of Physics, School of Science and Technology, Pratt Institute.

In addition to conveying a knowledge of facts and of fundamental theory, this book gives some training in ability to apply such knowledge to practical use. It is intended primarily as a text for elementary technical and manual training schools which find the usual texts too theoretical or too mathematical.

xii+321 pages. 5 by 7¼. 212 figures.
Cloth, $1.50 net.

Principles of Mechanism

By Walter H. James, Assistant Professor of Mechanical Engineering Drawing, and Malcolm C. Mackenzie, Instructor in Mechanical Engineering, Massachusetts Institute of Technology.

For use as a text in evening technical schools, trade schools and mechanic arts high schools. Typical problems are solved throughout the text and a large number of problems are included for solution by the student.

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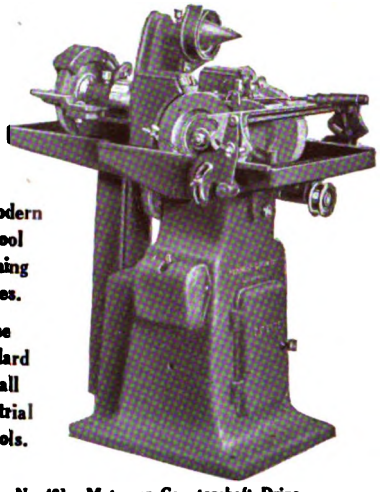

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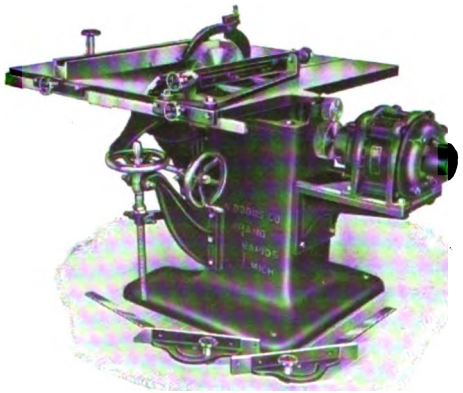

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FIELD NOTES

(*Continued from p. XXI.*)

in charge of institution stores or supplies and told they are the owners.

Governor Stephens, of California, has issued a call for 150,000 boys and girls to enlist in the United States school garden army. The value of the work has several angles, and includes reduced living expenses to the individual families of workers, benefits of exercise and interest in such pursuit, and the worth of educational contact with the soil, nature, weather, plants and animal life. There is also the added value of applying business principles to the product of their labor.

War time activities in the manual train shop have temporarily overshadowed the movement for building bird houses. However, C. M. Helwig, instructor in manual training at Monessen, Pa., has been able to resume this work to quite an extent. Several months ago the Pittsburgh Chronicle Telegraph announced a bird house contest, and this stimulated the interest of the students.

The manual training teachers of Pittsburgh, Pa., believe thoroly in the adage, "All work and no play makes Jack a dull boy." They have just announced the annual baseball game between the manual training teachers of the Central District and those of the North-South District to be played on the South Hills high school campus, Saturday morning, May 17.

Arthur H. Chamberlain, managing editor of the Sierra Educational News, has gone to France to take charge of the occupational direction work of the American Army overseas. This is a great opportunity for service to the men, and what he will glean and send back to us here at home will be of service to many teachers interested in vocational guidance.

Nearly 150,000 soldiers have already enrolled for vocational and other training in post schools in the A. E. F., and between 20,000 and 25,000 more are planning to begin university courses in

(*Continued on p. XXIV.*)

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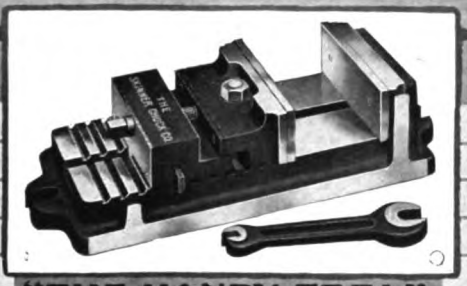
SKINNER
DRILL PRESS VISES



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FIELD NOTES

(*Continued from p. XXII.*)

French and English universities and in a specially organized A. E. F. University, which opened March 1, at Beaune, in Burgundy.

The above emblem was designed for the Vocational Education Association of the Middle West by W. B. Humphry, instructor in art at Bradley Institute. It suggests that in the territory whose center is Chicago the torch of learning burns with a double flame, one flame for cultural education and one for vocational. But both are permanently welded together, and both spring from a common element at the base.

Under a plan mapped out by the American Red Cross the boys of the country are to be given an opportunity to furnish practical aid to the war refugees of Northern France. The Red Cross wants 30,000 chairs and 10,000 tables for the refugees, and the furniture order has been placed with the Junior Red Cross.

A training school for boys is to be established in the abandoned war-time barracks at Toledo University. It will be patterned after the industrial department of the educational system at Mooseheart, Illinois. This use of war-time equipment is in line with the suggestions of some of the noted educators of the country, among them being Dr. John Dewey.

Senior students of the trade classes in the Central High School, Philadelphia, are making $3 a day, two weeks out of every four, working in the shipyards of the Chester Shipbuilding

(*Continued on p. XXVI.*)

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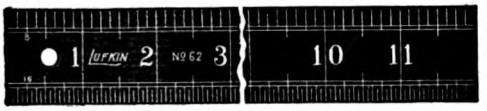

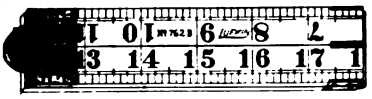

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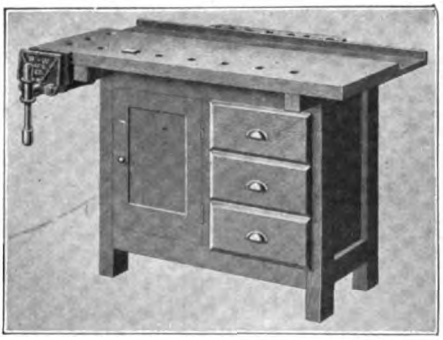

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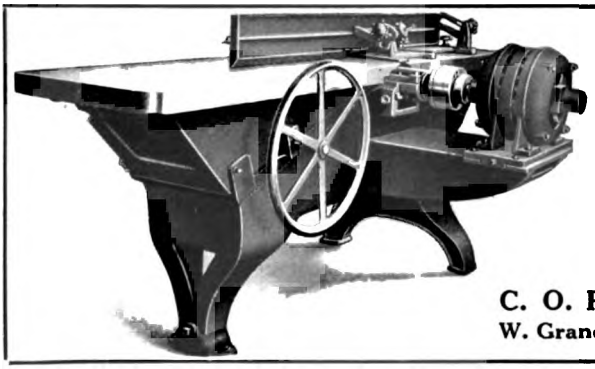

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FIELD NOTES

(*Continued from p. XXIV.*)

Company and in the shipyard at Harriman. Many of the boys plan to remain in the trade when their course at school is concluded.

Reports from Utah indicate that the State has taken many strides forward in constructive educational legislation during the present session. State Superintendent Gowans is enthusiastic about the future outlook. The impetus was given by the passage of the Smith-Hughes Law.

G. Adolph Johnson, for the past six years an inspector at the Worcester Boys Trade School, Worcester, Mass., has been granted leave of absence by the board of trustees to become vocational advisor for the Federal Board for Vocational Education, Boston.

C. F. McIntosh, of Purdue University, has been appointed to membership on the Federal Board to succeed Charles A. Greathouse. Mr. McIntosh is a graduate of Indiana State Normal School and Indiana University.

A school paper has just been launched by the printing department of the Holyoke Vocational Schools, Holyoke, Mass., and much interest centers around the new activity.

In Iowa City, Iowa, courses in gas engine work and architectural drawing have been introduced in the high school. E. J. Voigt is supervisor of manual arts.

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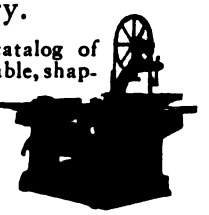

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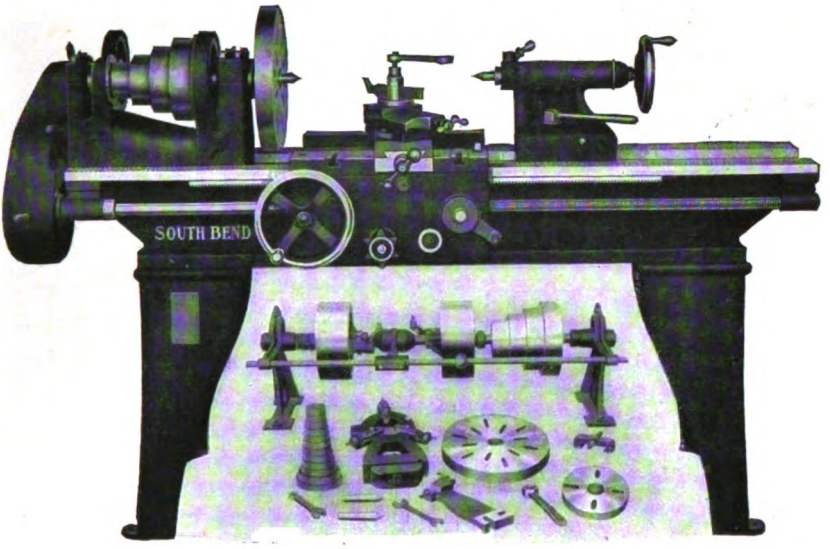

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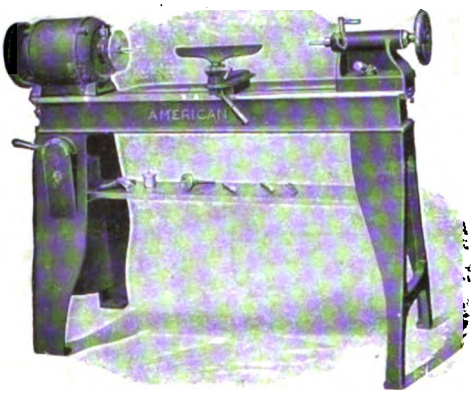

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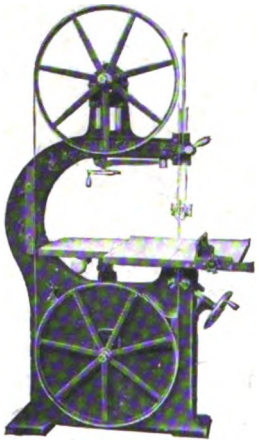

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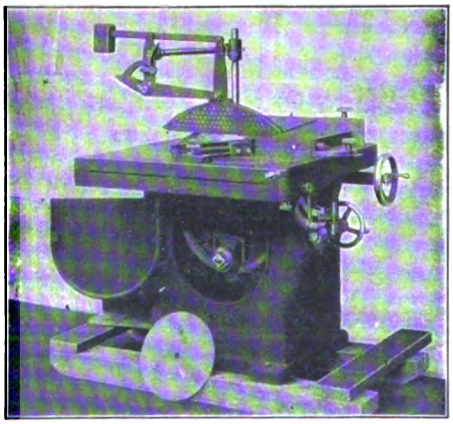

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Vol. XX JUNE, 1919 No. 10

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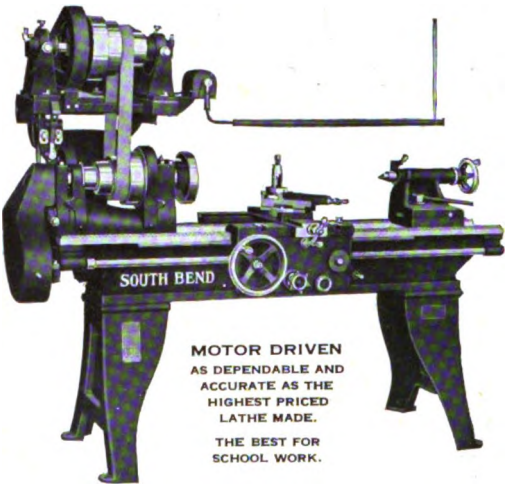

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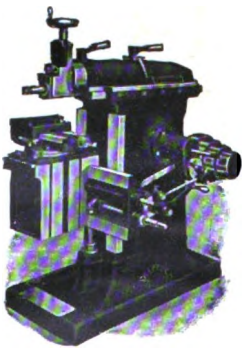

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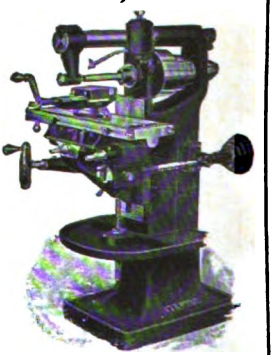

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FIELD NOTES

THE city of Milwaukee, thru its Association of Commerce, is leaving nothing undone to make the N. E. A. meeting a great success. Entertainments, excursions and receptions will vie with a strong convention program. The program is distinctly along reconstruction lines and takes into consideration the needs of the average teacher as well as those of the trained specialist.

Milwaukee has many advantages that will appeal to such a gathering. In the first place, the city itself has attractions as the largest and most progressive city in a state of many resources and activities. It is located in the midst of a beautiful lake country which invites the tired teacher to sojourn a while after the convention. On the other hand, if preferred, there are ten state normal schools and the state university, all with summer schools offering varied courses of instruction for the teacher who wants to do some professional work. With so many alluring attractions it is not surprising that advance information places the attendance at 15,000. The sessions open on June 28 and close July 5.

AROUND NEW YORK

The Art Alliance of America closed its exhibition on April 19. During the few weeks preceding this date the Alliance had on exhibition in its galleries the work of the pupils carried on in the twenty-six art, trade and vocational schools in New York City. The exhibition was displayed in groups as follows: Graphic arts, fashions, textiles, interior decoration, stage craft and toys. In addition to the designs, there were hand-decorated textiles, jewelry, copper pieces, pottery and wood-carving.

The Eastern Arts Association held its meeting in New York City from April 17 to 19. A number of prominent New York educators addressed the convention, including Dr. David Snedden, Teachers College, Dr. James P. Haney, director of art in the high schools, Dr. Frederick W. Robinson, director of Division of Vocational Education, New York City College.

The School Crafts Club held a "Smoker" in the Green Room of the Hotel McAlpin on Friday evening, April 18, at which time all men attending the Eastern Arts Convention were invited as guests of the Club. About a hundred men were present and enjoyed a very pleasant as well as profitable evening. Hugo B. Froehlich, president of the Club, acted as chairman of ceremonies. Major Arthur D. Dean, of Teachers College, gave a most interesting address in his usual forceful style. He pictured what he termed an "opportunity school" or a "cafeteria school," as a school where anyone might attend at any hour of the day or evening and secure the help and encouragement needed for any particular vocation. He told about spending a week at the "Opportunity School" in Denver, Colorado, stating that it was the only real school in this country that catered to everybody irrespective of race, occupation, or creed. Boys, girls, men and women attend this school from one to several hours a day and receive help along any line that they desire. Major Dean said that Denver has a real school that fosters democracy.

Following Major Dean, John C. Brodhead, assistant superintendent of schools, Boston, Massachusetts, brought greetings to the Club members from the Boston Manual Training Club, stating that the social side of a convention was a most valuable one.

Refreshments were served in Hotel McAlpin style and the meeting then came to a close.

What many regarded as the crowning feature of the convention was the excursion of the School Crafts Club to the shipyards at Newark, on Saturday afternoon, April 19. Altho the Eastern Arts Convention closed officially at twelve o'clock noon, Saturday, nevertheless one hundred and three men joined the afternoon excursion party. The excursion was held as the regular April meeting of the School Crafts Club and was arranged by John J. Hatch, State Normal School, Newark, and secretary of the Club. The Newark Bay Shipyard is the second largest in the country and was the first yard to launch a fabricated ship for the government. The twenty-eight "ways" were inspected by the men present, and some fifty ships in various stages of construction were seen and visited. The "training quarters" operated by the Emergency Fleet Corporation was a source of much comment. Here a "school shop" was in operation where men are trained for ship-building.

After a two-hour tour of inspection, the men assembled in the administration building and a program was presented. Mr. Hatch, chairman

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of the meeting, introduced Harry H. Tukey, educational director at the yards, stating that the Emergency Fleet Corporation considers the department of training at Port Newark the best in the country and that Mr. Tukey, being at its head, deserves the credit.

Following this address, several members of the Club spoke words of appreciation for the opportunity that had been offered, and pronounced this meeting a fitting climax to the excellent Convention.

The New York school system under the Bureau of Vocational Activities, George Loewy, director, has the largest cooperative system of vocational education in this country. It was inaugurated in 1913 under the direction of the late associate superintendent John Haaren and the general supervision of Dean Herman Schneider of the School of Enginering, University of Cincinnati, where the plan originated. It has grown constantly, not only in number of students enrolled, but also in variety and extent of work undertaken. Superintendent Ettinger succeeded Associate Superintendent Haaren in charge of this activity. R. W. Burnham, formerly of the Erasmus Hall High School, has been connected with the work since the beginning and is in immediate charge of the work as chief coordinator.

Six hundred and seventy-seven high school boys and girls are now studying and working alternate weeks with 175 business firms under the plan of cooperative part-time schooling. Under this cooperative plan pupils are paired, and while one spends a week at school the other is at work. At the end of the week they exchange places, taking up the study or the work, as the case may be, where the other left it. While employed they are paid the same wages as other employees doing similar work. During the past year the pupils earned $105,568.13.

Both while at work and while at school the pupils follow a definite course of instruction. Twelve teachers in the ten high schools in which the plan is operating serve as cordinators with R. W. Burnham as chief. They solicit the cooperation of the business firms, map out the course of study to be followed, and coordinate it with the work to be done. They also follow up the work of the pupils. New York was the first city to introduce classes in merchandise and salesmanship in the cooperative courses.

The board of examiners of New York City have announced examinations for high school licenses in machine shop practice and power plant drafting. Full particulars may be obtained from the Board of Examiners, 500 Park Avenue.

The board of superintendents of New York City have approved the appointment of Carolena G. Ronzone, a teacher in the School for the Deaf, as instructor of physically-handicapped children in the industrial art school, and as placement director for those children.

In schools having vocational classes, academic teachers who teach six hours a day exclusive of the additional sixty minutes of school-yard supervision and other service which teachers in other elementary schools are required to perform in addition to their teaching, have been recommended by the board of superintendents for increased salary to the extent of $250.

The education committee of the Brooklyn chamber of commerce has transmitted to the members of the Board of Education a report recommending favorable action by the Board on the allotment of funds amounting to $400,000, for necessary shops and equipment to make possible the continuation of the technical course for boys in the Brooklyn Manual Training School. The technical courses for boys were established in the school last February and are likely to be discontinued at the end of the school year, due to the fact that the funds necessary for shops and equipment for continuing this work are not to be made available.

Because the manual training courses offered in the Manual Training School were not preparing the boys for practical work on leaving school, during January 1919, 700 applications were received from boys to enter these courses. Five hundred of these applications were accepted and the courses started in February of this year. An analysis of the applications of the students who were allowed to begin the work indicated clearly not only the popularity of the courses, but also that practically in each case the boys had some definite aim in entering the course; i. e., either to prepare for higher technical schools or to enter employment in some branch of industry for which the courses prepare them.

In a sense this is a demonstration of a new theory of secondary-school technical training. The question at issue is whether this course

(*Continued on p. VIII.*)

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shall continue or be discontinued because of the lack of necessary shops and equipment.

The demand in Brooklyn industries for employees with preliminary technical training is large and is not being met at the present time. This fact was definitely established by the committee's investigation and by a conference with representatives from one or more industrial concerns in each of the five specialized lines for which training is given in this technical course.

—W. H. DOOLEY.

NEWS FROM THE NORTHWEST

The twenty-first annual session of the Inland Empire Teachers' Association met in Spokane, Washington on April 2, 3 and 4. The Manual Arts Section held its meetings the first and second days in the Lewis and Clarke High School. Byron Broom, of Spokane, was chairman of the meeting on Wednesday, April 2, and C. E. Russum, also of Spokane, acted as secretary. The program was as follows:

"Progress of Teacher Training Courses and Future of Manual Training in the State," George Henry Jensen, supervisor of teacher training, trades and industries, University of Washington, Seattle, Washington.

C. B. Gwynn, director of manual training, State Normal School, Cheney, Washington, and C. H. Cross, head of the department of manual training, Lewis and Clarke High School, Spokane, conducted a questionnaire on manual training problems.

L. B. Travers, superintendent of vocational education, Everett, Washington, who was elected chairman of the manual arts division for the following year, gave a very good talk on "Related Mathematics for Smith-Hughes Courses."

"Project Method of Teaching Handwork," was the subject discussed by Edward G. Anderson, principal of training school, Ellensburg, Washington.

"Present Status of Smith-Hughes Work in Washington," by C. R. Frazier, director of vocational education for Washington. This speech and the following one by Benjamin W. Johnson were of especial interest.

"Present Status of Smith-Hughes Work in the Pacific District," Benjamin W. Johnson, federal agent for vocational education, Pacific district, San Francisco, California.

The foregoing was followed by a business meeting and election of officers.

The division of vocational education had a very strong session on Thursday, April 3. George Henry Jensen, Seattle, was chairman of the meeting, and Alfred R. Livingston, Missoula, Montana, secretary. The following program of short talks was especially good:

"Smith-Hughes Course of Study in Agricul-" ture," by W. S. Taylor, federal agent for agricultural education.

Round Table on Course of Study in Agriculture, led by Layton S. Hawkins, chief of vocational division, Federal Board for Vocational Education, Washington, D. C.

"Smith-Hughes Course of Study in Trades and Industries," Benjamin W. Johnson, federal agent for industrial education.

"Vocational Home-making as a School Course," Anna E. Arnold, principal Girls Polytechnic High School, Portland, Ore.

"Why Promote Smith-Hughes Courses," Dr. J. R. Jewell, dean of College of Education, University of Arkansas, Fayetteville, Arkansas.

"Women in the Trades and Industries," Anna L. Burdick, federal agent Women's Trades, Washington, D. C.

A business meeting and election of officers followed.

The Washington State Manual Arts Association met in Seattle, May 24. The Association was the guest of the teachers of the city, and the committee in charge, under the chairmanship of Lee A. Juillerat, provided abundant and excellent entertainment. The program was opened with a business meeting, followed by discussion of subjects herewith:

"Project Teaching of Handwork in Upper Grades," Henry J. Whitney, Ellensburg; "Recent Educational Legislation in Washington," Charles T. Miller, Tacoma; "The Industrial Arts in Spokane Junior High Schools," C. E. Russum, Spokane; "Recent Developments in the Junior High School Movement," T. R. Cole, assistant superintendent, Seattle; "Viewpoint in Vocational Education," George H. Black, president State Normal School, Ellensburg.

Luncheon.

(*Continued on p. X.*)

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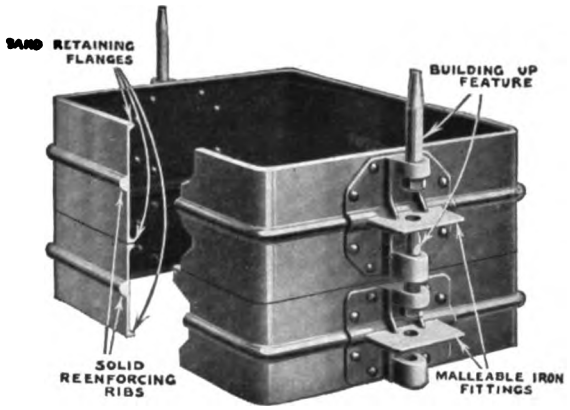

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FIELD NOTES

(*Continued from p. VIII.*)

Afternoon program:

"Business Methods in Shop Management," R. W. Moore, Seattle; "Vocational Guidance in Seattle," Charles Kirkpatrick, Seattle; "Progress in Vocational Education," Benj. W. Johnson, San Francisco.

An excursion thru the shipyards, a cafeteria dinner and a show concluded the meeting.

This was a most successful meeting from every standpoint—the various subjects well handled, the trip thru the shipyard of great interest, and the welcome from the teachers very gratifying.

C. R. Frazier, federal director of vocational education of the State of Washington, with headquarters in Seattle, has been appointed president of the Idaho Technical Institute at Pocatello, to succeed the late Miles Reed. He will take over supervision of the institution June 1. Dr. Frazier was superintendent of schools in Everett, Washington, for eight years in which he established a strong technical high school. He is a deep student of all phases of vocational education.

—E. G. Anderson.

IOWA MANUAL TRAINING ROUND TABLE

The Manual Training Round Table at the meeting of the Iowa State Teachers Association at Muscatine was held in the auditorium of the public library. E. Y. Voight, of Iowa City, as leader, gave a short talk welcoming those present and then introduced the first speaker on the program, Ralph Windoes, of Davenport, Iowa. Mr. Windoes read a very interesting paper on "Scientific Organization as Applied to the Manual Arts."

The second number was "A Study of the Plane," by Ralph Othmer, of Muscatine. Mr. Othmer gave a practical demonstration by squaring up a piece of stock step by step. Mr. Fisher, of Muscatine, an experienced upholsterer, next gave a practical upholstering demonstration by upholstering a footstool as done by the tradesman. The third number, an open discussion of the Smith-Hughes Law, was led by R. H. Barnes, of Burlington. The main questions brought forth in this discussion were: Just how are we going to start the Smith-Hughes classes? How can

(*Continued on p. XII.*)

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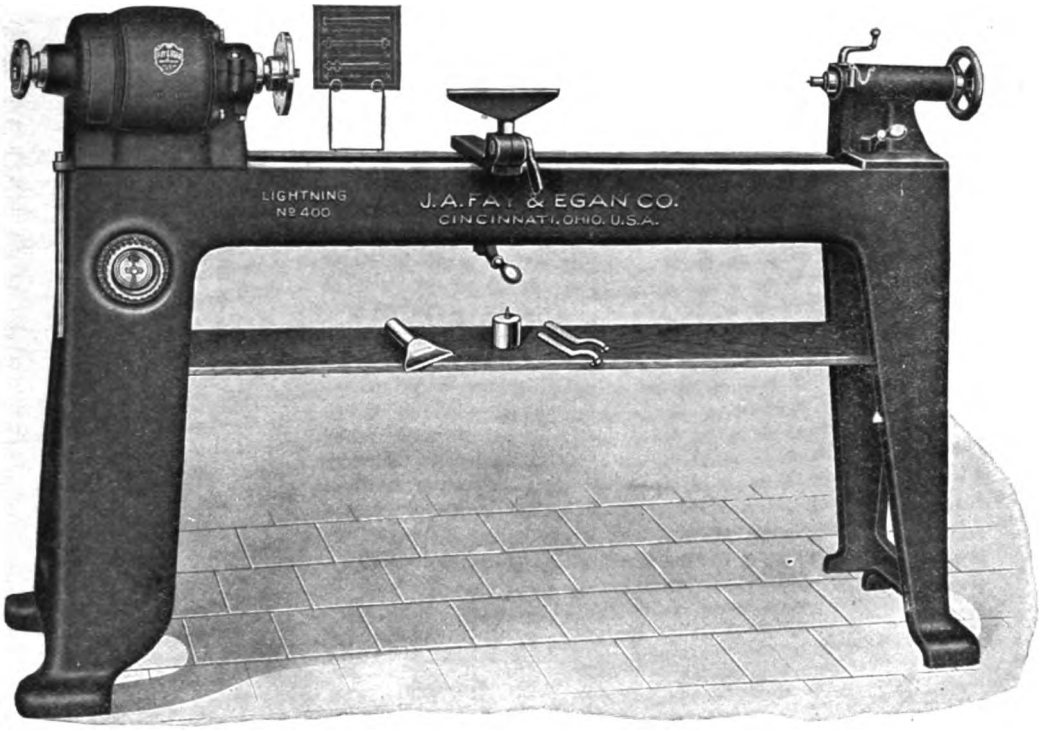

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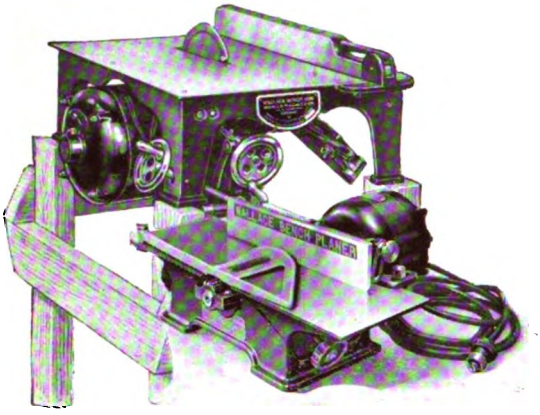

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FIELD NOTES

(*Continued from p. X.*)

we get the backing of the laborer and employer necessary to get these classes started? Following this the need of a continuation school law in Iowa was discussed. A resolution was adopted memorializing the Legislature to provide such a law.

Mr. Windoes was elected president for the coming year.

A brief summary of Mr. Windoes' article on "Scientific Organization as Applied to the Manual Arts" follows:

Departmentalization is one of the first requisites. Close cooperation between students, teachers and department chairmen is necessary during any reorganization period.

The supply and accounting systems should be organized early. This is an important feature which is frequently neglected. These systems should be as nearly automatic in their operation as possible.

Courses should be revised on an analytical basis. The mechanical features of a project and the pedagogical methods employed should determine where the project belongs in the course.

Elimination of useless motions and anything obsolete should be accomplished.

The manual arts teacher should become acquainted with local industries and the men who run them. They should analyze these trades and secure the elements in them that can best be applied to school conditions, keeping the predominant community interest always in mind.

—ALBERT F. WIEGMANN.

SMITH-HUGHES ACTIVITIES AT JACKSONVILLE, FLORIDA

An attempt was made at Jacksonville, Fla., to take advantage of the Smith-Hughes funds. The state of Florida very liberally matched the Federal funds, dollar for dollar, therefore it devolved upon the city schools to use these funds, provided we could come up to the proper standard. The city of Jacksonville was lucky in that all of their work was approved.

The situation was canvassed thoroly and it was decided that the evening extension school was the most needed work. With this in mind, we enlisted the various trade unions and received a hearty response. Classes were conducted from 4:00 to 10:00 P. M., as needed, at

(*Continued on p. XIV.*)

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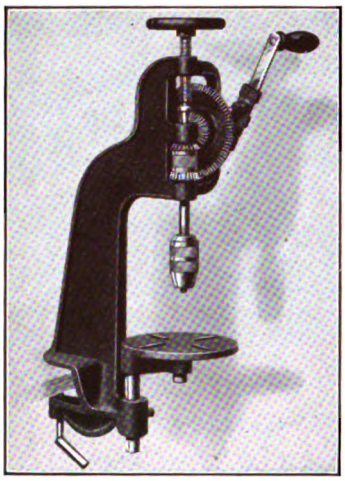

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MILLERS FALLS TOOLS

FIELD NOTES

(*Continued from p. XII.*)

the most convenient time and place for the various groups.

In all, fifteen teachers were employed, but the regular force soon settled to eleven teachers. These teachers were all selected from the trades and given a short intensive teacher-training course under the guidance of Professor T. H. Quigley of the State University. Although new in the profession, these teachers have done some remarkable work, holding the attendance as high as 90% and keeping a fine interest.

We were unable to develop all trades at this time, so the more important ones were undertaken. Courses were offered for wood ship workers, steel ship workers, and house carpenters. The total enrollment was about 400 with a completing record of about 300. Most of these courses were conducted two or three times, as the enrollment warranted. There is being organized at present a series of courses for plumbers, which are offered at the request of the plumbers in the city.

—R. G. Sawyer.

BUILDING PROGRAMS

The city council of Madison, Wisconsin, recently granted permission for the issue of $300,000 in bonds for the erection of a new manual training and vocational high school, which is to be an addition to the present high school building. Courses including printing, bookbinding, general machine work, auto mechanics, carpentry, brick laying and cement, woodworking, electric work, plumbing, and pipe fitting will be offered.

A new vocational school is to be built in Battle Creek, Mich., bonds for which having been issued.

Bids for the construction of the main building of the Delgado Trade School, New Orleans, are soon to be let. This is to be the center of a group of buildings and will cost between $400,000 and $500,000. Work is to begin on the structure as soon as the contract is awarded. It is planned that the remaining buildings of the group shall be built by pupils as a part of their training.

Ground will be broken soon for the erection of the new $500,000 vocational school in New-

(*Continued on p. XVIII.*)

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Being a facsimile of the front page of a school paper such as could be printed in your school—if printing outfit were installed.

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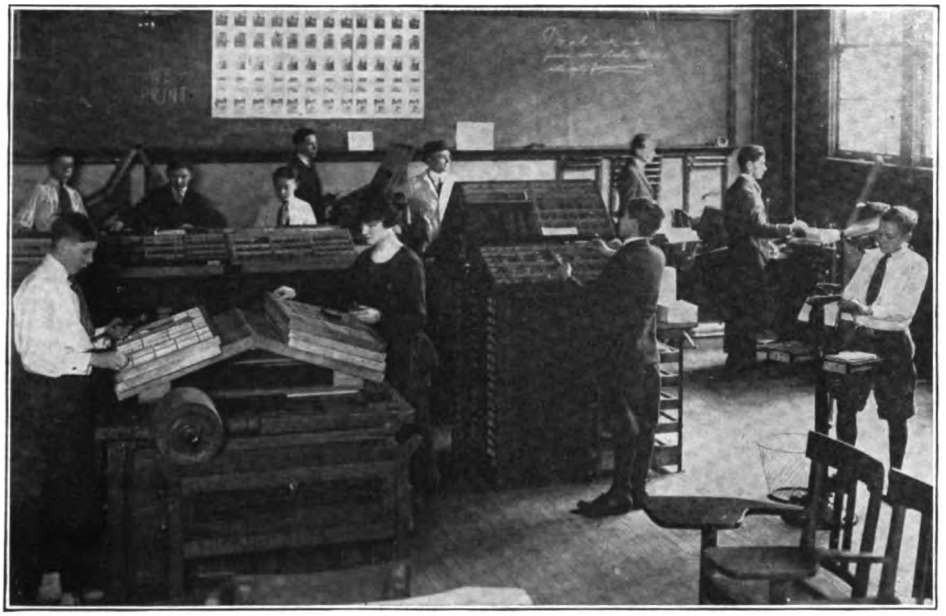

Print Shop, Woodward High School, Cincinnati, Ohio

"Progress"

The School Paper of the Middlesex County (N. J.) Vocational School, says:

EVEN if the boy does not elect to follow the printing trade, his training in this department must benefit him in any walk of life. What wood is to the Woodworking Shop and metal to the Machine Shop the English language is to the Printing Shop. The constant forming of words and sentences with type is one of the best ways of teaching a boy spelling, punctuation and English composition. In this era of well-established recognition of the value of publicity, the Printing Department is a very important medium. In no other department of vocational training is there the opportunity to place before the boys, the parents, the taxpayers and the public at large, quickly and concisely, an accounting of what the schools have done, are doing and what they expect to do.

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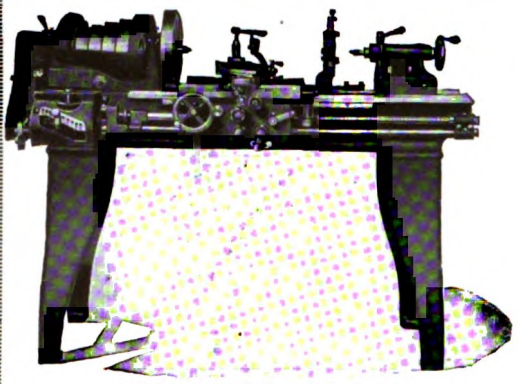
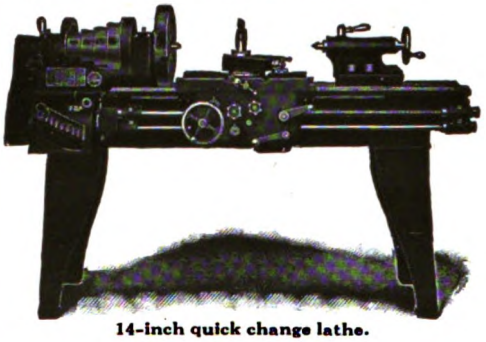
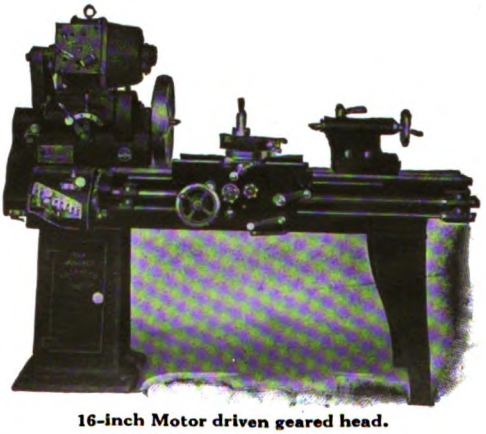


12-inch quick change lathe.



14-inch quick change lathe.



16-inch Motor driven geared head.

12-inch Motor driven lathe.

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VOLUME XX No. 10

MANUAL TRAINING MAGAZINE

JUNE, 1919

LEARNING TO EARN

THOMAS ROBERT FOULKES AND THOMAS DIAMOND
Both of the University of Wisconsin

EVERY boy wants to earn money. Many boys in school do earn, and no boy can see the sense in studying something that will help him to earn only "when he grows up" unless he can begin to apply it *now*. Manual training should be of such a nature that it will yield to every pupil immediate practical values as well as prevocational values. The great realization to the boy that he is learning to do things for which the world is willing to pay is far more important than the amount of money earned. Earning is largely a habit born of a confidence, the foundation of which is previous success. The school should develop this habit, and the manual arts department can do it most successfully. The large number of high school graduates turned out into the business world each year to drift idly and helplessly along until they develop sufficient self-confidence to make themselves of value is a striking illustration of the failure of our schools to encourage the earning habit. The success of high school and college boys who "earn their way" is conclusive proof of the value of the earning habit.

The study of 1532 boys in the upper grammar grades and first two years of high school in the thirty-six cities of Wisconsin showed that 650 boys, or 42.3%, made use of their manual training in earning money. The other 57.7% did nothing to earn money or earned it in other ways than thru the application of manual training work. No attempt was made in this study to discover the value of manual training to high school graduates. The study was confined to immediate practical values to pupils still in school, that is, to find whether or not manual training has values for all pupils regardless of whether or not they use it in their future vocations.

There are many well recognized values accruing to manual training which no doubt are of assistance to pupils earning money, but which in a scientific study cannot be taken as reliable evidence of help in earning money unless the direct application of the value is stated or shown. For example, if a pupil said, "Learned to be exact, careful, neat and prompt," the answer was not counted affirmative. If that same pupil had said in addition to the above, "This helps me in the work I do making boxes at the canning factory," the answer would have been considered affirmative. Other typical answers which were not taken as affirmative are:

"Learned to do work more systematically."

"Learned in manual training that every job should be done neatly and accurately."

"Learned to think quickly."

"Learned to do my best in making projects."

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A number of other answers which are typical of those that were counted "No" in tabulating the result of the test are given below. Many of these indicate merit and valuable results. But the question asked how much money was earned, and all answers which did not indicate the earning of money were counted negative.

"It teaches you how to go at a job and do it right. That it is always better to have a plan before attempting or starting any kind of work."

"Learned to understand the reading of plans."

"I have learned to mind my own business, and work steadily at my task, it doesn't pay to waste your time, learned to use tools that I never knew the names of before."

"If necessary I could go out and earn my own living by what I've learned in manual training. I could do general carpenter work, sharpen tools, etc."

In contrast to the answers quoted in the preceding paragraphs a number of typical ones are given which were counted affirmative:

"Last summer I worked on a 400 acre farm. In the spare time the farmer and I built a 6,000 bushel grainary with concrete floor and driveway."

"Worked at a foundry and helped fix and tear apart patterns."

"In summer I sometimes work in cement work, I have had some help in this from my study of manual training."

"I have learned to handle tools, the knowledge of which has been of assistance to my employer in repairing and building lattice work for his windows. I work in a candy and ice cream and fruit store."

BIRD HOUSES MADE FOR SALE BY SEVENTH AND EIGHTH GRADE BOYS.

"I have built a mushroom bed in which I shall raise mushrooms for sale."

The fact that 42.3% of 1532 pupils make use of their manual training in earning money speaks exceedingly well for the practical worth and nature of the instruction. This is even more convincing when we consider that the work has *not* been taught with the avowed purpose and loudly advertised advantage of commercial possibilities which has characterized other forms of work of a vocational nature such as the commercial courses. This large number of pupils making use (without instruction) of their acquired skill indicates great possibilities for manual training when it shall be given with more emphasis upon learning to earn.

A study was made of how the 42.3% of the pupils turned their manual training experiences into money in order that some

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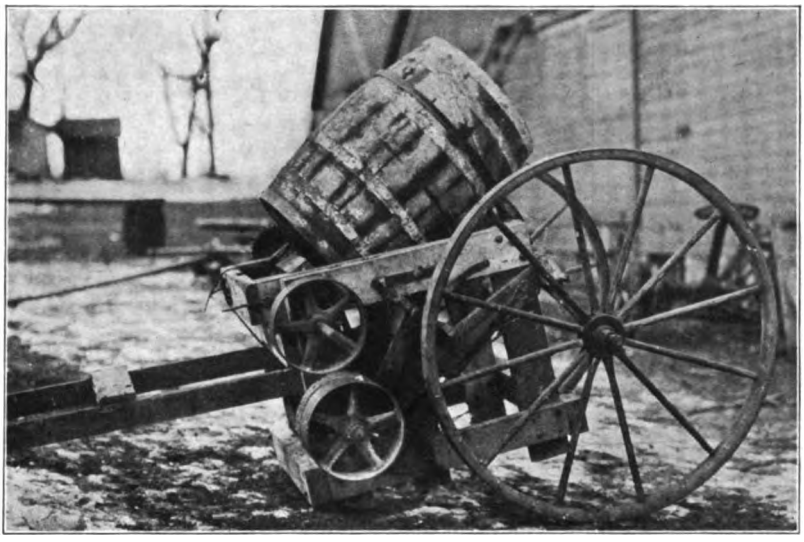
things might be revealed which would be of use to the other 57.7% of the boys who did not seem to be able to "turn the trick." A record was kept of the evidence offered and was arranged under the general headings "Money Earned," "Manual Training Helps in Earning Money," and "Things Sold." From the collection thus arranged these answers may be made a powerful stimulus to interest in the work of manual training in upper grades. This plan will be especially effective if introduced in connection with the present interest in War Savings Stamp Clubs in the grades and junior high schools. The establishment of an employment bureau by such a high school club



AN EFFECTIVE CEMENT MIXER BUILT TO AID IN EARNING BY A PUPIL IN A MINNESOTA CONSOLIDATED SCHOOL.

a number of interesting and suggestive answers were selected with a view of putting them before the manual training pupils in the form of a mimeographed pamphlet, as suggestions for earning money. The writers feel that a valuable and practical result from the study of this question can be secured by the 57.7% thru the use of their manual training knowledge in similar ways. It is not proposed that the boys should confine their efforts to the items listed, but that these items should stimulate the boys to use their own ingenuity in devising similar means of turning their learning into earning.

The definite suggestion is made to directors and teachers of manual training that in a mid-western city has emphasized the need of information in regard to what work boys can do. The following quotations supply the information for boys below the high school, and suggest work for boys of high school age. These quotations preserve the boys' original spelling and expression in answer to "What have you learned in manual training to help you in the work you do to earn money?"

MONEY EARNED

"I learned to use tools in which I earned $5.50 all together."

"I got a dollar a day for lathing a house. Manual training helped me to do that lathing."

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"In manual training I learned to be accurate, therefore I sold me fern stand for one Bone."

"My father pays me $1.00 per week for what I do around the house. First paid 50c, but I am handier since I take manual training. I made runway for ashes which enabled me to do more work."

MANUAL TRAINING HELPS IN EARNING MONEY

"At manual training I have learned to make joints which have helped me in making a scaffold which my father used in his business and which he pays me for building."

"I lathed all last summer. Made bread boards and sold them, fix up drawers and legs, hod handles for plasterers, rifle stocks."

"Made a paper carrier for my wheel. Made a taboret for a neighbor. Made a dog house for my aunt. Made pen holder for the druggist. Learned to bevel."

"Fixed up my wagon to sell fish. Put hinges on a door."

"Made a snow scraper and much money. A fish sled and a lot of money."

"I mended a wooden sidewalk and helped shingle a roof. I received pay for it."

"Making boxes for St. Mary's hospital."

"I fitted some screens for our next door neighbor."

"I helped a neighbor erect a vine climber, and I helped a carpenter board a house."

"Helped make a door through a barn wall."

MANUAL TRAINING HELPS IN "RUNNING ERRANDS"

"Learned to plane, saw, chisel, made a box to haul groceries and other things."

"Put a box on my scootmobile."

SUGGESTIVE TYPES OF PROJECTS MADE FOR SALE BY PUPILS AT WATERTOWN, WISCONSIN.

MANUAL TRAINING HELPS RISING YOUNG BUSINESS MEN AND CONTRACTORS

(Twelve years old) "Fixed my rabbit coop and made it warmer and the belgian hare young grew harty and I sold them for a good price and kept them from freezing."

(Fourteen years old) "Built chicken coop for myself and got money from the eggs; sold kites that I made. Red Cross membership from making knitting needles, made needles and sold them."

(Fifteen years old) "Built sidewalks, built bird houses and sold them, repaired a boat, made kites and got money, knitting needles and sold them."

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THINGS SOLD

"I have made a box which I sold."

"I sold a footstool."

"Sold a taboret, plant stand, and foot-scraper."

"I learned to make a box which I sold to a boy for his wagon."

"I have made stools and I am selling them. I learned something of manual training so that I can be a carpenter when I am big. I have been working for men helping them getting the boards in houses. I have worked on a barn putting nails in barns and pounding boards in."

(Fifteen years old) "I made a fence for my neighbor. I sawed the wood in fine shape and then hammered them together."

(Fifteen years old) "Made a book trough and sold it."

"I sold me things which I made this year."

"I made a fishing sled and sold the fish."

"Made a picture frame and sold it. Repaired a railing and made some spare money."

(Ten years old) "Make match scratchers and sell them."

(Fourteen years old) "Sold some of me manual training products."

(Thirteen years old) "Sold a bread board."

(Twelve years old) "I have learned to make small stools to hold plants, box to let pet animals sleep in for money."

BOYS IN HIGH SCHOOL (FRESHMAN AND SOPHOMORES) EARNED MONEY IN SUCH WAYS AS THESE

"Last summer I worked on a 400-acre farm. In the spare time the farmer and I built a 6,000-bushel grainary with concrete floor and driveway." (Sixteen years old, 2nd year H. S.)

"Make the stands and different things like that to trim windows in a ten cent store."

"Helped repair auto in garage, rewired a barn for electric lights."

"Made crates while working in a department store."

"Puttied windows, put in five new windows, painted three rooms, scraped and stained two chairs."

"Helped build a garage and built a chicken coop."

"Worked at a foundry and helped fix and tear apart patterns."

"In summer I sometimes work in cement work, I have had help in this from my school work (manual training)."

"Work in hardware store. Learned how to make boxes or repair them for shipping. Learned to drive nails accurately."

"Learned to handle tools and machinery so that I got a job as a carpenter on barns, houses, etc. On these jobs I shingle, lathed mostly, but am beginning to do more important things such as making partitions, etc."

"I have learned to use common tools correctly and keep them in condition. Do electrical repair work and small wiring jobs. Also wired houses. This work requires a knowledge of common tools."

"I have built a mushroom bed in which I shall raise mushrooms for sale."

"Work in the Parmount Knitting Co. Make bins for goods and waste, also repair and close filled boxes."

"Learned to handle saw, hammer, and plane, this helped me to get job repairing pea boxes at the canning factory."

"I have learned to handle tools the knowledge of which has been of assistance to my employer in repairing and building lattice work for his windows. I work in a candy and ice cream and fruit store."

"I make boxes for shipping away lightning rods, on Saturday."

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Conclusion—An immediate practical value of manual training for pupils should be the development of the *habit of earning* thru the application of their acquired knowledge and skill. This will come as the result of the realization by the teacher that he is teaching *boys* as well as his subject. The habit of earning will be accomplished thru inspiration furnished the pupils by means of definite information as to "how other boys do it."

The fact that 42.3% of 1532 pupils made use of their acquired skill without instruction in that regard indicates great possiblities from manual training when it shall be given with more emphasis upon *learning to earn*. The results of the study should prove convincing.

AUTOMOBILE GASOLINE ENGINE REPAIR

J. W. S. HODGDON
Director of Manual Arts, High School, Norwalk, Connecticut

A COURSE in auto gasoline engine repair has been introduced in our junior and senior high school classes. This is proving to be a very valuable course from the practical point of view, and I find it high in its educational value. The boy's mind is trained on a variety of details which surround the taking down, reassembling, and adjustment of a gas engine. This training enables his mind to grasp and hold many ideas closely associated with each other.

GAS ENGINE ROOM, OVER RIVER JUNIOR HIGH SCHOOL, NORWALK, CONN.

This course also causes the boy to think, act, and judge for himself on many of the minor details relative to the taking apart and reassembly of an engine. It gives him an appreciation of the necessity for being careful, in order to get results. He just naturally wants to see the engine run, and therefore does his very best in order to get the result he is looking for.

Now regarding the practical side of the subject. The gas engine course is especially valuable because it teaches about a subject which will be associated in the life of almost every man. Nearly every boy will at some time in the future either own, operate or repair some type of gas operated machinery. The electrical side of gas engine operation also lays an excellent foundation upon which he may rely for future information, should electrically

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operated machinery replace the gas engine.

The introduction of a gas engine course in the junior and senior high schools need not be difficult or expensive. To prove this, here is my own experience in the matter. At the beginning of this school year we were greatly handicapped by lack of funds in our woodworking classes. Fearing that some of our classes might have to be dropped, I went to some of our garages and asked for assistance in establishing an auto engine course in our school department. The idea worked like magic. Soon we had an old model Buick engine, a four-cylinder Berliet, a six-cylinder Cameron, old and good magnetos, carburetors, batteries, coils, etc.

After a short and intensive course of four months, practical results began to show. Reports were constantly coming in about small jobs being satisfactorily done by the boys on machines about town. One man came and asked that I try to influence his boy to return to school and take the course. Another man from back in the country told his boy that it would be a good idea if he would return to school for the winter at least; and so the idea grew.

One noon hour upon my return to the school, I found one boy's father waiting for me. He wanted us to take his motor boat engine and put in a new piston, and generally overhaul it. We are now working on his engine, and on a Ford which was brought in for the same purpose.

The expense to the educational department has been about $25.00. The boys contributed $1.00 each toward the course, making in all, a total of about $60.00.

This course gives the teacher an opportunity to talk less. It furnishes an opportunity for the boys to make suggestions. In fact the boys do discuss and work out many of the problems of a mechanical nature, they also offer many suggestions along theoretical lines. I encourage this type of self-education, and often find myself an interested listener to the boys' discussions. The boys have been allowed to work out many suggestions which they themselves made.

PRINTING AND THE PRESENT PROBLEM OF RECONSTRUCTION

ARNOLD LEVITAS
Instructor in Typography, College of the City of New York

ONE of the great problems before the country today is to find a way to take care of some of the thousands of cripples who are returning from the battlefields of Europe. It is quite well established that most of these disabled men—perhaps ninety per cent—can be reclaimed to a certain amount of usefulness. In many cases the loss of efficiency on the part of these men will be almost negligible.

Many of the trades will have some form of activity which will be open for these handicapped men, and in which they can become useful after a reasonable period of training. Experience, such as can be gotten from Europe and Canada where reconstruction work has been going on for some time, shows that the specialized training given to these men, under proper vocational guidance, makes them in many instances valuable acquisitions to the industry as well as to themselves.

The printing trade, as will be seen from the accompanying table, has a particularly open field for the training of these men. Many of the branches of this trade lend themselves appropriately for this kind of reconstruction work, and in most branches

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there are opportunities for men partially disabled.

The following table, prepared by F. K. Phillips of the American Type Founders Company, shows the percentile loss of efficiency under various circumstances, the average loss of efficiency, and the average value to the trade of these handicapped men.

PERCENTILE LOSS OF EFFICIENCY IN PRINTING TRADE DUE TO LOSS OF LIMBS, HEARING, OR SIGHT

PRINTING Occupational Branch	Blind	Deaf	One Arm	One Leg	Legless
Estimators	50	25	50	2	10
Layout Men	100	10	50	2	10
Job Compositors	100	5	75	5	25
Proofreaders	100	10	2	2	2
Stonehands	100	2	100	25	100
Foremen Composing Room	100	10	10	1	50
Foremen Pressroom	100	15	50	1	50
Machine Operators	100	5	75	10	20
Platen Pressmen	100	10	60	90	100
Cylinder or Automatic Pressmen	100	10	60	90	100
Web Pressmen	100	10	100	90	100
Printing Salesmen	75	5	5	5	100
Proprietor	50	1	10	2	10
Straight-Matter Compositors (Hand)	100	2	75	5	10
Feeders (Platen)	100	2	100	10	25
Feeders (Cylinder)	100	2	*85	5	25
Paper Cutters	100	2	100	20	100
Average Loss of Efficiency	93%	7%	60½%	25%	50%
Average Value to Trade	7%	93%	39½%	75%	50%

*If left arm is retained. Loss of left arm would cause a 90% loss of efficiency.

Each one of the branches of the printing trade has its peculiar functions, and, in order to show how the various activities may lend themselves to the work in question, they are here explained.

Estimator:—Work consists of figuring costs of materials and time, and furnishing prices on printing. Loss of efficiency due to loss of one arm, one leg or even both legs is comparatively slight.

Layout Man:—Work consists of planning jobs and advertisements. Ability to write, draw and design is necessary. Not required to stand or to move around in search of materials.

Loss of efficiency due to loss of one leg or both legs comparatively slight.

Job Compositor:—Work consists of setting type of various sizes and faces. Requires considerable moving around.

Loss of efficiency due to deafness or loss of one leg almost negligible. Loss of one arm, or both legs would almost incapacitate for this work.

Proofreader:—Work consists of detecting errors in the product of printers. Requires thorough grounding in essentials of grammar, spelling and structural English. Does not require moving around.

Loss of efficiency due to deafness is considerable, as proofreader requires a copy-reader. Loss of one arm, one leg or both legs would decrease efficiency only slightly.

Stoneman:—Makes up and locks up forms of type. Requires much standing and moving around. This work could be done by a deaf person, or one who had lost one leg. Could not be done by one who had lost sight, one arm, or both legs.

Foreman of Composing Room:—Work is supervisory in character. Could be done by deaf, one-armed, one-legged or legless person.

Foreman of Pressroom:—Work is supervisory in character. Could be done by deaf, one-armed, one-legged or legless person.

Machine Operator:—Work is similar to operating typewriter. Workman is enabled to sit down. Work could be done by deaf, one-legged or legless man.

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Platen Pressman:—Work consists of making ready on jobs on small presses. Workman required to stand and use both hands. Could be done by deaf or one-legged person.

Proprietor:—Executive work. Could be done by person losing hearing, one arm, one leg or both legs.

PRINTING CLASS, RED CROSS INSTITUTE FOR CRIPPLED AND DISABLED MEN, NEW YORK CITY

Cylinder or Automatic Pressman:—Work consists of making ready on cylinder or automatic presses. Great skill required. Workman required to stand and use both hands. Could be done by deaf or one-legged person.

Web Pressman:—Work consists of operating newspaper presses. Deaf person could do the work, but with a loss of efficiency. Loss of sight or one limb would prohibit doing work of this character.

Printing Salesman:—Work consists of soliciting printing business and submitting estimates. Could be done by a person losing hearing, one arm or one leg.

Straight-Matter Compositor:—Work consists of setting plain reading matter, usually on country newspapers. Deafness or loss of one leg would not lower efficiency. Loss of both legs would not materially reduce capacity for production, but would reduce efficiency owing to necessity of requiring assistance in moving about.

Feeder on Platen Presses:—Work consists of placing sheets of paper in press and removing same after being printed. Requires both arms and hands. Deafness or loss of one leg would not decrease efficiency.

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Loss of both legs would reduce efficiency owing to necessity of requiring assistance in moving to and from press.

Feeder on Cylinder Press:—Work requires skill in placing large (usually) sheets of paper to guides previous to being printed. Deafness or loss of one leg would not decrease efficiency. Loss of right arm would prove a hindrance, but work could be successfully performed if left arm is retained.

Loss of both legs would decrease efficiency to a great extent unless a seat attached to the press is provided. This is easily done.

Paper Cutter:—This work requires the cutting of paper on either a hand-lever or power paper cutter. Both hands are required. Deafness would not decrease efficiency.

Loss of one leg would decrease efficiency slightly. Loss of both legs would incapacitate.

It might be added that the best results would be attained if a disabled man could be made useful in the trade in which he was previously engaged, or some branch of his former trade. This would reduce the time necessary for his training, would make it much easier for him to become useful again, and would coincide with the general idea of the trades unions not to unduly overcrowd the trades.

This, of course, is not always possible, but where a man is to be trained anew the trade chosen should coincide with his inclinations and adaptability so far as possible.

A GASOLINE ENGINE FOR SCHOOL MANUFACTURE

B. E. WING
Department of Manual Arts, LaSalle Township High School, LaSalle, Illinois

ALMOST every boy, unless there is a very radical change in the near future in the methods of utilizing power, will come in direct contact with the internal combustion engine in some form. Realizing this condition the writer experimented for some time to get a type of engine that would be practical, and therefore of interest to boys, and which would be simple enough in its process of manufacture so that it would lend itself to good instructive work in the drawing room, pattern shop, foundry, and machine shop.

This motor is of the two-cycle, two-port type. The gasoline tank is in the base, and the motor is governed by a centrifugal governor which provides adjustment for various speeds between 600 and 1,400. The entire machine work can be done on a 12" lathe if necessary.

A standard ½" Lunkenheimer mixing valve is used, a couple of turns of the fly wheel being necessary to draw the gasoline up to the mixing chamber, thus starting the feed. No oil cup is necessary, the lubricating oil being mixed with the gasoline.

The cooling is by air blast from the fan, built as arms in the fly wheel. The cooling fins on the cylinder are set at an angle which utilizes the maximum air currents from the fan. Plenty of radiating surface is provided for successful cooling under full load for long periods.

One of the features of this little motor is the single bearing crank shaft, which makes a very much simpler job of the machine work on the crank shaft, and makes it much easier to line the shaft with the piston than is the case of the two-bearing type.

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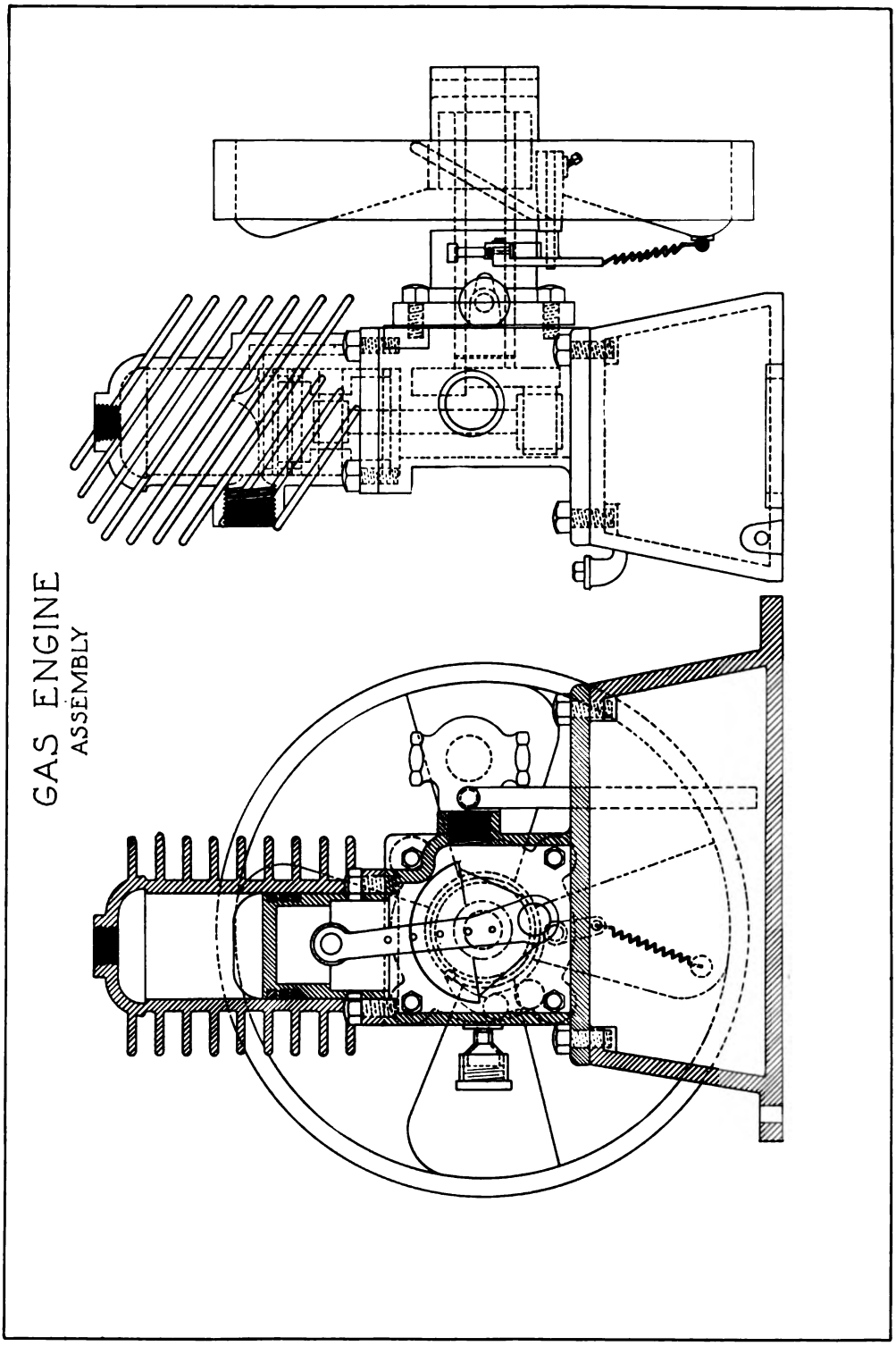

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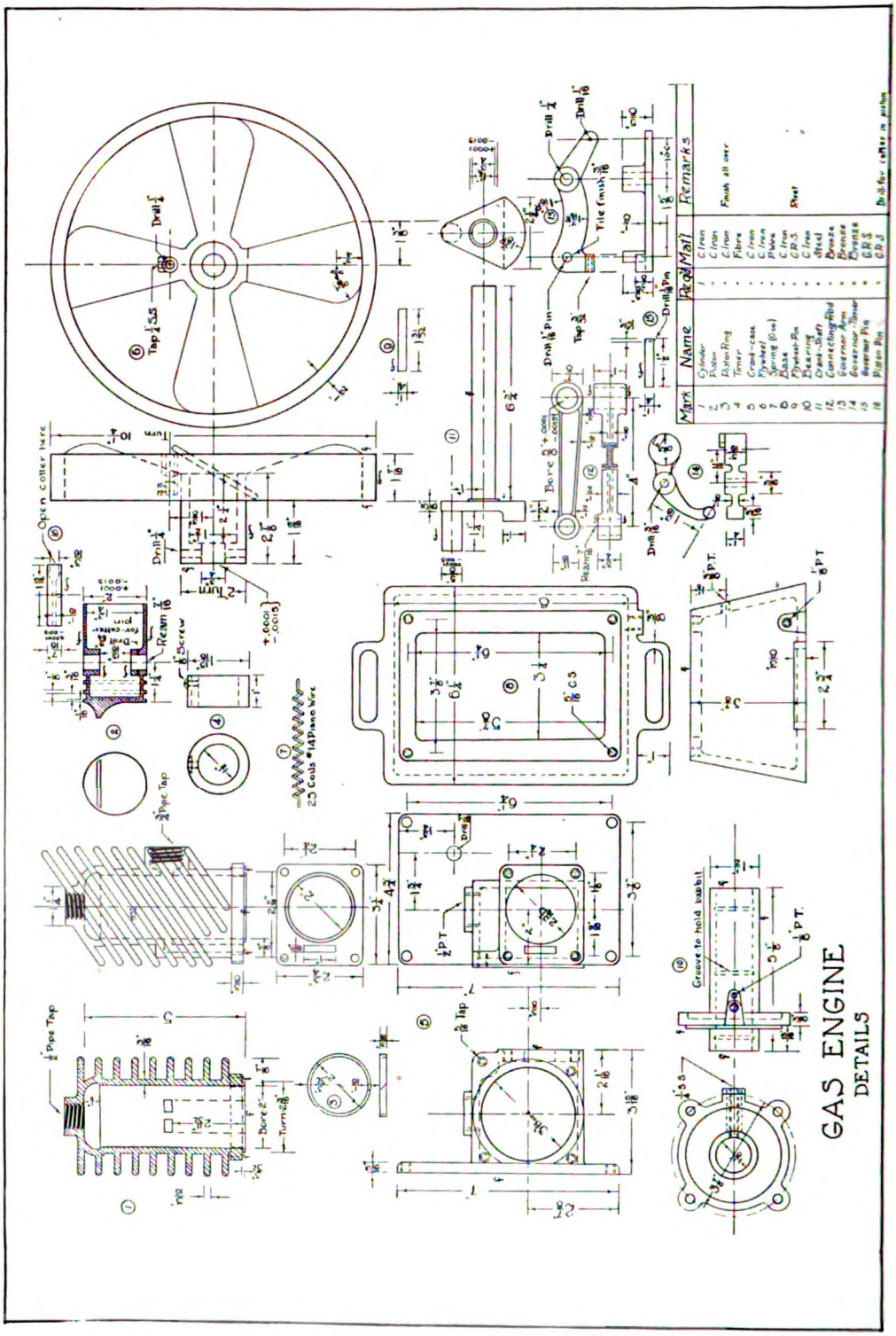

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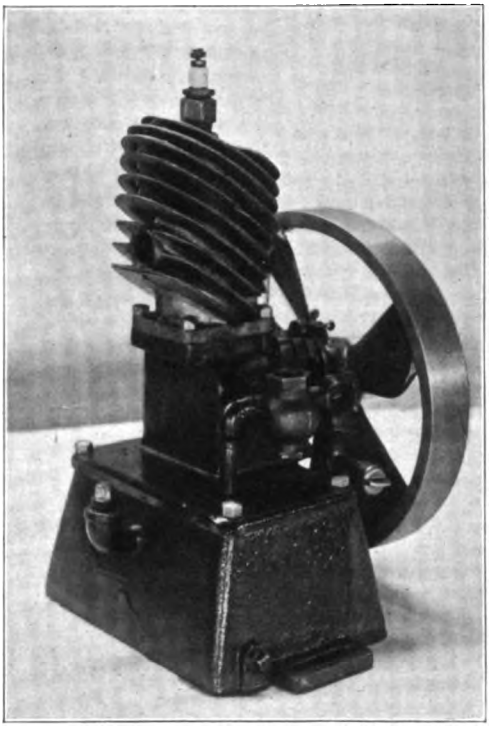
Actual brake tests show this small motor to produce 55 H. P. It is absolutely flexible as to variations of load, the governor working perfectly. The motor provides an excellent power plant for a small home shop, washing machine, pump, or dynamo, and because of the few moving parts is absolutely reliable in its operations.

As a project for school machine shop work this motor is especially valuable, as the average high school boy can complete one of these in a semester. The actual test in the use of the finished motor is an incentive to accurate work which no instructor's checking micrometer can equal.

With the help of the accompanying assembly and detail drawings and the photograph, the construction of the motor should be made clear. The exercise piece in the woodshop has been largely eliminated from our courses. Why should not the same methods be of advantage in the machine shop?



GAS ENGINE MADE AT LA SALLE TOWNSHIP HIGH SCHOOL, LA SALLE, ILL.

THE CHICAGO CONVENTION

CHARLES A. BENNETT

THE Western Drawing and Manual Training Association has now become the Western Arts Association. This important action was taken at the close of the annual convention held at the Chicago Art Institute, May 6th to 9th. It was the result of long discussion in committee, extending over several years, and finally came up for action in connection with other revisions of the constitution of the Association. Altho there was scarcely any opposition evident at the time of the action there were many members of the Association who were not fully satisfied with the name adopted, but they seemed to be unable to propose a different one that did not meet with objections. As a compromise, a name which includes the household arts, as well as those arts supposed to be represented in the original name, it is hoped that the new one will prove satisfactory.

In many of its features the Chicago meeting was very successful, and credit is due to the officers and committees who contributed so generously of thought and labor to its success. The Art Institute also, with its unequalled facilities for school exhibits and excellent lecture hall, was a most important contributing factor. The only lack that we heard expressed was due to the fact that there were no commercial exhibits this year. As never before the members were conscious that the commercial exhibits contribute to the interest in the annual convention. Without commercial exhibits the convention may be compared to an issue

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of the *Ladies' Home Journal* without advertising pages. We have become so accustomed to them and find them so interesting that we like them.

The various sessions were well balanced and interest was sustained thruout each; some of the round-table meetings were especially good. The annual banquet, presided over by the popular toastmaster, William J. Bogan, was no exception to this statement. In fact, it was one of the very best of the long series of such events held by this Association.

The general subject for the convention was "New Ideals and Reconstruction in Education," but if one were to revise the subject after the meeting it might well be, "The Great Need of More Art in Industry, in Education and in the Every-Day Lives of the American People." Some phase of this subject appeared in almost every program, and the sum total, coming as it did from manual arts and technical school teachers, manufacturers and business men, teachers of drawing and experts in the household arts, made a strong impression on the members of the Association.

Without attempting to adequately review any of the addresses of the convention a few impressions may be given and a few statements quoted.

Oliver Dennett Grover, the painter, deplored the fact that it is common to use the term "fine arts" in a way to depreciate "the art that is just as fine that goes into a chair or a piece of textile."

Ethelwyn Miller, professor of household arts, Iowa State College, would have teachers "follow up art teaching with expression in the home." "The mind that applies is the genius." She would have every problem in sewing the application of an art principle.

Royal B. Farnum, director of the department of applied art at the Mechanics' Institute, Rochester, N. Y., made a strong plea for the use of a standard color notation, and pointed out that the scheme worked out several years ago by Professor Munsell of Boston, seems to be meeting the need not only in schools but in several branches of industry.

Lionel Robinson of the Tobey Furniture Company in a very easy, off-hand talk related some of his experiences in employing school graduates. He found students with a surplus of confidence in themselves, and with fine impulses, but with very little ability to draw. He did not expect the schools to turn out furniture designers, but he did think they might turn out furniture draftsmen. He said that water color is the most common means of expressing design, yet the water color drawing of most students is so dry that it gives one a "ten-years thirst." "Good water color technic is of great value in the commercial world."

Mr. Robinson further pointed out that the commercial world demands definiteness. The student should therefore know what he is representing. If he is to draw Greek architecture he must know Greek architecture. He emphasized, also, the commercial value of good lettering.

An interesting difference in point of view was evident between Mr. Robinson and William Gray Purcell, a Philadelphia architect and manufacturer, who gave a most stimulating address entitled "The Ultimate Consumer." Mr. Robinson asked the question, "Why is it we are so bound to tradition when we come to furniture design?" He answered it by saying that the furniture of any era is a result of the economic conditions of that era. He seemed to look upon the present era, however, as an extension of the eras in Europe that gave us the historic period furniture because Americans are the children of Europeans. He was apparently satisfied with

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period furniture. Mr. Purcell, on the other hand, sees in our American economic conditions a new era which is bringing forth new forms in furniture and conveniences. He pointed to new forms that are already here. He referred to the American telephone as having a form perfectly adapted to its function. The American automobile at its best is a form characteristic of American life; the bungalow is another. Mr. Purcell is looking forward to an American art that really expresses American ideals thru American methods of production, and is in response to the demands of American living conditions.

At a manual arts round table held at the University of Chicago, Professor Emery Filby discussed "Industrial Education versus Industrial Training." In the course of his address he said, "To my mind there are four fundamental types of experience to be had in connection with industrial work, and they are these: (a) experience connected with the development of technical skill; (b) experience in meeting thought-provoking situations; (c) experience in production on a commercial basis; and, (d) experience in bringing together in an effective fashion information contained in printed and illustrative material."

In discussing the development of skill he said, in part, "In the main we will find that skill may be developed effectively and economically in so far as it is raised to the reflective level, the level of "free ideas." Modern psychology points to transfer of training in proportion as the learning is carried forward on this reflective level. If there is one distinction between education and training it is just this: that in one case an individual is led to think independently and reflectively about the thing he has in hand, in the other to do a few things thru imitation, trial and error or trial and accidental success, but with little power to make independent adjustments of any kind. Training on the latter level is the type that fits an individual for a job but not the type in which we are interested as education for the normal individual."

Professor Ira S. Griffith in his presidential address at the opening of the convention expressed some ideas closely related to the above when he said, "The facts are that much of the argument for and against so-called generalized habits is quite unprofitable and unfair because it is based upon differences of terminology rather than differences of fact. Undoubtedly a great deal of art, household arts, and manual arts is so taught that it does not develop anything but habits of accuracy, neatness, etc., in these specific activities, and it is undoubtedly true that such habits are more likely to manifest themselves in connection with the particulars of subject matter with which they were developed than to manifest themselves in connection with other specifics thru ideals or generalizations. However, the fact remains that it is possible to so teach such particulars that generalizations or ideals may be derived, which ideals can later be made to function in new situations by serving as connecting links between one specific experience and another and different one.

"If the old idea of discipline places too much emphasis upon ideals as connecting links between experiences, and too little on subject matter and method, the present ideas of some so-called progressives of today will probably be found lacking in that the attachment of meaning so directly and immediately to content and method and the failure to get pupils to make abstractions and generalizations from these specifics leaves the pupil in just about as bad a position in that he is helpless when new and slightly different situations arise. Only as pupils are taught to abstract meanings are they able to see and make connections in a large way.

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"If a prophecy will encourage you, he (the president) will prophesy that the really large part of education and training for specific manipulation is going to be done 'on the job.' This will be true largely because of limitation in the matter of organization, such as expense of equipment and difficulties in the adequate dilution of the mistakes of the learner so as to produce a marketable product without monetary loss. If this prophecy is true, then the really big task of the school organization, as such, will, as in the past, be one of developing ideals from comparatively few particulars of subject matter and method."

The following officers were elected for the coming year: President, Miss Jeanette Buckley, Chicago Art Institute; vice-president, Harry Wood, Indianapolis, Indiana; treasurer, Leonard W. Wahlstrom, Chicago; auditor, Miss Emma Conley, University of Wisconsin; member of the Council, Ira S. Griffith, University of Missouri.

The meeting next year will be held in Detroit.

OPERATING A LATHE IS MORE FASCINATING AND INTERESTING TO ME THAN KEEPING HOUSE, OR BRINGING UP CHILDREN, OR GOING TO PARTIES, OR ANYTHING ELSE IN THE WORLD; NOW THAT I AM GETTING TO UNDERSTAND THE MECHANISM THOROUGHLY, AND THE WORK IS GOING WELL, I AM A BLISSFULLY HAPPY WOMAN; THE WORK TAKES MY WHOLE ATTENTION, FOR EACH FUSE HAS TO BE WATCHED CAREFULLY, AND THE EXCITEMENT AND JOY OF TURNING OUT PERFECT WORK IS QUITE MARVELOUS—*From "Night-Work in a Munition Factory" by Winifred Brooke Irvine.*

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EDITORIAL REVIEW OF THE MONTH

MR. BENNETT TO GIVE HIS FULL TIME TO EDITORIAL WORK

THE senior editor of this Magazine has resigned from his position as dean of technology at Bradley Polytechnic Institute in order to devote his entire time to editorial work on the MAGAZINE and the other publications of The Manual Arts Press. This action has been under consideration for more than a year. The effect upon the Magazine will be to make possible its further development as a practical aid to teachers of shopwork and mechanical drawing. A detailed announcement of contemplated plans for the coming year will be made sometime during the summer or early in the fall.

PROFESSOR SELVIDGE RETURNS TO THE UNIVERSITY OF MISSOURI

THE most important personal news item received during the past month was the announcement that Professor Robert W. Selvidge of the George Peabody College for Teachers will return to the University of Missouri when Professor Ira S. Griffith enters upon his new work at the University of Illinois. In accepting the invitation to Missouri Mr. Selvidge is going back to his home state and to his home university. His title there will be Professor of Industrial Education, and he will work with the School of Education and the School of Engineering.

Mr. Selvidge began his teaching career in the rural schools of Missouri, and later was superintendent of the Johnson County schools. In 1900 he introduced manual training into the high school at Joplin. In 1903 he went to Louisiana to take charge of the Industrial Arts Department of the Louisiana Industrial Institute, and remained there four years. In 1908 he went to the University of Missouri to take charge of the Manual Arts Department in the School of Education, and later had charge, not only of that work, but also of the shopwork in the School of Engineering. In 1913 he accepted a position as Professor of Industrial Education at the George Peabody College for Teachers, Nashville, Tenn. In the six years he has been at Peabody College, he has supervised the construction of approximately $1,000,000 worth of buildings and has been chairman of the Instructors' Committee which has had to deal with all the problems of organization and administration of the internal affairs of the College. He has been so fully engaged in this work that he has had comparatively little time to devote to the actual teaching of his department. In April 1918 he was appointed District Director of Vocational Training of the Committee on Education and Special Training of the War Department, and had charge of District No. 5, and for several months, District No. 4 also. This included the southeastern section of the United States.

ROBERT W. SELVIDGE

Mr. Selvidge obtained his first collegiate training at the University of Missouri from 1896 to 1898, when he entered the army as a volunteer to serve in the war with

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Spain. On his return to civil life he entered the State Normal School at Warrensburg, Mo., where he graduated in 1900. He completed the teacher-training course in manual arts at Bradley Polytechnic Institute in 1907 and received both the B. S. and M. A. degrees at Teachers College, Columbia University, in 1908.

Mr. Selvidge was President of the Western Drawing and Manual Training Association for 1914. Besides winning professional honors he has won a host of professional and personal friends, all of whom will wish to congratulate him on entering upon the work of his new position under most favorable circumstances.

LESSONS LEARNED IN TRAINING MECHANICS FOR THE ARMY

IMMEDIATELY following the convention of the Western Drawing and Manual Training Association there was held in Chicago, on May 10th, a conference on the results of the experiences in training mechanics for the Army. This conference was called by the U. S. Bureau of Education, and was presided over by Dr. William T. Bawden. The meeting was held in the assembly room of the Board of Education. While the attendance was not large, the interest manifested by those present made up for any shortage in attendance.

One of the first speakers was R. A. Kissack of St. Louis. Some of his conclusions were:

1. Thru intensive training skill can be acquired in a very short time.

2. The more intelligent the man before taking the training the better mechanic he will become; therefore, give a student all the general education you can before he takes his special vocational training.

3. To meet the industrial situation a teacher should know the needs of industry and then train men to meet those specific needs.

Mr. Kissack stated that he had never before seen such enthusiasm in school work as was evident in the Army training work. This was because of the great need of men to do a high patriotic service. The lack of a definite need for service is usually a drawback in industrial instruction.

Another speaker asked whether vocational training should be for a narrow job or for a more comprehensive trade which might include training for quite a large number of narrow jobs. In reply to this a representative of Wilberforce University said, "Strive for excellence of craftsmanship." "Our skill in this country has been reduced by the factories."

Dr. Bawden called attention to the fact that in industry a man makes progress by moving from one job to another. Professor Selvidge indicated how this result was brought about at Tuskegee Institute in training mechanics' helpers by requiring them to spend a week in each of seven different trades. At the end of that time these students were regarded as superior to others because they had "more mechanical ideas," tho they had not received anywhere near as much training in the technic of any one particular trade.

Do not these testimonies point to the fact that in vocational training, as in general education, better results come when there is plenty of thinking on the job to accompany the action?

USE OF THE JOB SHEETS

A LARGE proportion of the time at the conference was spent in discussing the value of the job sheets prepared and sent out by the Committee on Education and Special Training of the War Department. One speaker thought they were not good teaching manuals because the pro-

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cedure was too fully defined; another that they were "not complete from any point of view." Still another speaker said they were "splendid supplementary material, but should not be taken as a basis for instruction. The job sheets were valuable as throwing "content into the work."

It soon became clear that the purpose of the job sheets had not been fully understood. Some thought they were intended as guides for teachers; others that they were texts for students. All who assumed that the sheets were intended to indicate things to be learned or done, and not the methods of teaching them, seemed to regard the sheets as a very valuable aid in teaching the men.

NEED OF WALL-PAPER DESIGNERS AND PAPER HANGERS

THE Allied Wall-Paper Industry from its headquarters at 1328 Broadway, New York City, has recently sent out a letter calling attention to the great need of more trained workers in two important vocations: (a) wall-paper designing and (b) paper hanging.

Concerning the former the letter says America should have a standard of art of its own that is equal to the best in the world, that the only way this can be done is for the industries themselves to lend their assistance, and that not until the training of efficient designers has had proper consideration in America can America hope to take her rightful place in the great world development that should go steadily on. Concerning the latter it states that at the present time there is a great scarcity of hangers of paper all over the country, and that the ability of those engaged in the work averages exceedingly low, owing to the fact that many of them never have had any intelligent training, simply "picking up" as best they could such knowledge as they possess. This situation, the writer believes, offers a splendid opportunity for trade and vocational schools to serve their communities. He adds, "There is probably no other field in which competency can be acquired in so short a time and which offers so steady employment, and good wages, as this same trade of paper hanging and decorating."

The letter ends with an offer to provide wall-paper for the use of vocational schools. All that is required of the school is that it give the facts concerning the purpose of the course, the number of students and the use to which the paper is to be put. Such practical cooperation will be appreciated by the schools, and it ought to have the effect of increasing the number of courses offered in this subject.

DR. HANEY LECTURES AT THE CHICAGO ART INSTITUTE

EXCEPTIONAL honor was conferred upon a supervisor of the Arts in public schools when Dr. James P. Haney, of New York City, was selected to deliver the Scammon Lectures this year at the Chicago Art Institute. These lectures were six in number and were given during the first part of April. The general subject for the course was "Art for Use." The purpose of the course was to stimulate a deeper interest in the development of an adequate system of industrial art training in the United States, and especially to make a plea for action during this reconstruction period following the war. In his fifth lecture Dr. Haney pointed out that America need not experiment in this field, for there are excellent European examples which will serve as suggestions in the development of schools, but Europe can no longer furnish America with a sufficient number of trained designers. The following is quoted:

> America in the years to come will have to depend upon her own resources in the industrial

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arts. Foreign states can no longer supply her with designers, but foreign states can and do show the steps by which these designers may be trained. England is covered with a network of great industrial art schools, some forty in all. France is similarly provided with over thirty large city schools, and scores of local schools of design. Paris alone has a dozen craft schools, headed by the great institute of design named after Bernard Palissy.

The varied organizations of all these schools make it unnecessary for us blindly to experiment. We have before us, if we only choose to see, the newest and best-planned buildings, the most ingenious arrangement of courses, schemes for scholarships, and well-planned co-operating trade committees. We have for model the whole machinery of two well-developed industrial art systems perfected through nearly sixty years of experimentation. A host of the suggestions one should not copy, but should adapt to our own needs.

New York, not to be outdone by Chicago, gave Dr. Haney a testimonial luncheon shortly after his return to the East. This was held at Hotel McAlpin on May 3rd and was given in recognition of his ten years of service as director of art instruction in the high schools and the thirty-one years of service in the schools of New York City. Over two hundred guests were present.

FEEDING TABLES AND RESTING BOXES FOR BIRDS

THE National Association of Audubon Societies with headquarters at 1974 Broadway, New York City, is sending out leaflets encouraging the making of feeding tables and resting boxes for birds. It is also encouraging the formation of classes for the study of birds. The leaflet gives a form of constitution for such a class and lists of desirable books on birds.

WASHINGTON CORRESPONDENCE

GOVERNMENT FORCES IN WASHINGTON

MANY persons, including some of us here in Washington, supposed that after the signing of the armistice there would take place a marked decrease in the number of government employees in Washington. There was, in fact, a sudden reduction in clerical forces soon after the cessation of hostilities, but apparently it was more than offset by increases in other directions.

Some even thought we should quickly lose practically all of our war-emergency population. On the other hand, some who were better informed as to the probable needs of the government service predicted that there would be no material change for many months. That these latter were correct is shown by the figures which have been made public from time to time during the past few weeks.

By the first of April, nearly five months after the signing of the armistice, the total number of government workers in Washington who had left the service was 4,179. An incomplete report made a few days ago by the congressional commission having this matter in charge showed that there were 104,000 employees in the offices included in the report, and from this it was estimated that there are in all approximately 120,000 civilian employees of the government in Washington, including men in uniform who are engaged in strictly civilian activities.

From these figures, therefore, it appears that the government forces are diminishing at the rate of about 1,000 per month. This process can scarcely be characterized as a demobilization! The figures for a single month, March, are interesting. During this month the total number of employees reported as leaving the Departments

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was 4,356, or about 1,000 per week. During the same period 3,304 men employees were taken on. Thus the net decrease was 1,052. According to reports in the newspapers the committee on housing was still having difficulty in securing satisfactory living quarters for new workers late in April.

EASTERN ARTS ASSOCIATION

PRESIDENT Augustus F. Rose, and chairman of the program committee, Frank E. Mathewson, deserve much credit for a very successful convention of the Eastern Arts Association in New York City, April 17 to 19. After an absence of a number of years it was my privilege to be in New York and to attend several sessions of the convention.

A new feature of the meeting was the attention given to school gardens. Two enthusiastic section programs were devoted to this subject, in addition to the usual sections on art, manual arts, household arts, and another new section devoted to "ungraded classes."

I was told that more than 600 persons registered. The executive committee decided not to undertake an exhibit of school work. A splendid exhibit was prepared by commercial advertisers in a large room adjoining the ball room in the hotel in which the meetings were held.

The interest and attendance were maintained up to the very end of the final session on Saturday morning. However, the Friday evening session seemed to stand out in the minds of those with whom I talked. It was a rich and varied program, tho somewhat long. I left the hall just before midnight, and was told the next morning that another speaker followed the one who held the floor when I left. And after adjournment the School Crafts Club held one of its unique "get-together" functions. One of the men, who lives a little way down in Jersey, confessed to me that it was after three when he got home!

TWO LETTERS

ALTHO the continually rising cost of living makes trouble and concern for all of us it still is possible to see the lighter side of it, if we can maintain a sense of humor. To assist toward this worthy end I cannot resist quoting the following letter which was printed a few days ago in a Washington paper. While the spelling and punctuation do not, in all respects, meet the standards which we are trying to live up to in this MAGAZINE, nevertheless, I think the sentiments expressed will fall within the comprehension of most of our readers. The letter represents a petition from a convention of laborers in the state of Alabama, addressed to the Secretary of State:

"Sec. of State, to honor:

"We the laborers of the state of Alabama, appeal to you, stating our suffering in the south. The cost of liveing is so high and our wages are so small. We are forced to pay the local merchant 35 cents per lb. for dry salt bacon, $1.75 for twenty-four lbs. of flour, lard 35 cents per lbs., ham 50 cents per lbs., peas, 20 cents per lbs., sugar five lbs., 60 cents.

"Our wages. We are rated at $2.50 per day. And a man haveing a family of seven and eight persons to feed and clothes and pay house rent. We ask you to solicity on and in our behalf that Congress enact a low base for food, so that we can live.

"We do not regret to die for our countrymen, but we feels that the American Republic ought to see that the citizen can get a decien liveing. And we believe Congress will admit the rights of Independence have been taken from the American people. We have heard the doctrin preach that this a country of free speecj, but it is not true.

"Co-operation sets prices on our cotton and Sells it, the truck planter gets nothing. We only ask for a chance to live. Our wages is cut and today and we can not live unless we robe

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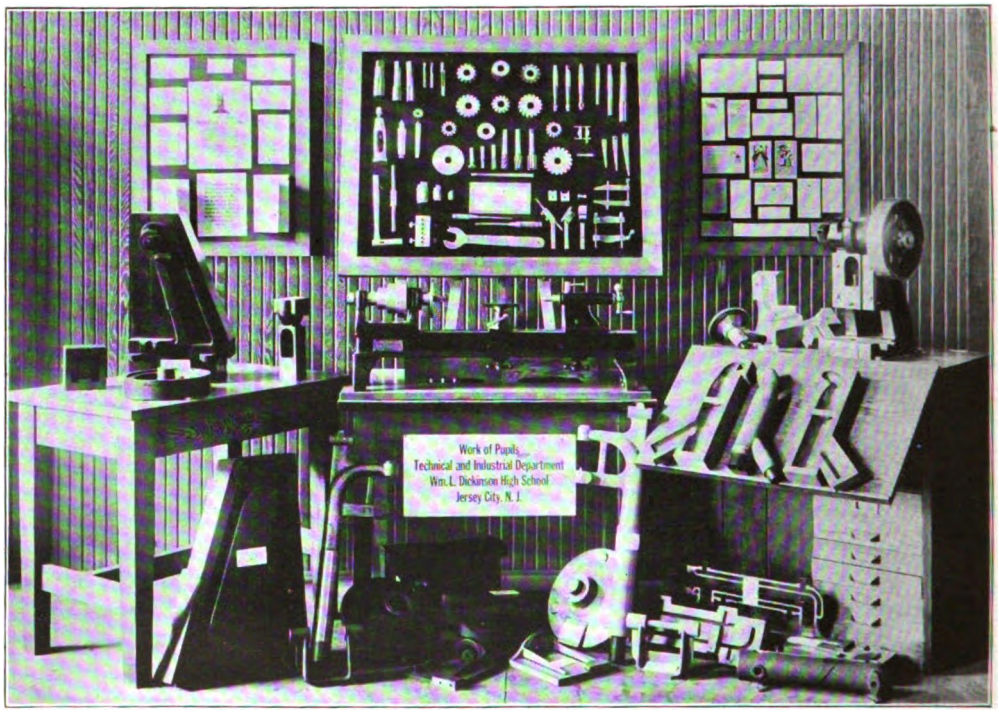
or break in and steel, but if Congress enact a law and set a low base for food so that the $1.50 one dollar and fifty cent man can live, the claim is that the government have force a cut on labor or plants close down."

FAITH IN THE GOVERNMENT

STILL another pathetic example of the faith which people are coming to have in the ability of the government to meet every trying situation is found in a letter which came to Commissioner Claxton's desk a few days ago. Evidently the news had gone forth that the Bureau of Education is interested in education for health, and is actively engaged in trying to stimulate recognition of the importance of teaching young people how to secure and preserve good health. And so this correspondent, in a state which shall be nameless, writes:

"Will you send me a free trial of your health and flesh restoaror. I hav loste my helth and dont way but a hundred pounds. Pleas send me a free trial."



Under the direction of the Secretary of the Interior there has been arranged, in the corridors of the new Interior Building, a selected exhibit showing a few of the principal activities of the country which are touched by the Department. One of the features of the section on Education was a display of students' work contributed by the Dickinson High School, Jersey City, N. J., Frank E. Mathewson, director of industrial education. The exhibit opened on May 19th.

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SHOP NOTES AND PROBLEMS

ALBERT F. SIEPERT, Editor

REFUGEE FURNITURE

THE American Red Cross gives to the boys and schools of America the opportunity to help in the speedy restoration of the homes of refugees in Belgium and northern France who have suffered so much from the depredations of the Teuton arms. The call comes for 30,000 folding chairs and 10,000 tables. A large part of the first consignment should be on its way across the sea by July 1.

Material used in the manufacture of these tables and chairs will be furnished free by local Red Cross Chapters.

REFUGEE CHAIR

The lumber for these chairs should be a straight-grained hardwood, as birch, maple, ash or oak. The construction can be determined from the working drawing. Notches are cut near the top of the back rest to accommodate guide screws, as shown in the drawing. The battens are notched out to receive the seat supports as shown. Birch and maple chairs should be stained mahogany, and those of ash and oak should be stained mission oak color. They should be finished with one coat of shellac and one coat of varnish.

BILL OF MATERIALS FOR REFUGEE CHAIR

Item	Name	Size	Reqd.
1	Leg	1 1/16 × 1 3/8 × 23 3/4″	2
2	Leg	1 1/16 × 1 3/8 × 35″	2
3	Batten	1 1/16 × 1 3/8 × 12 3/8″	2
4	Seat Support . .	3/4 × 1 3/8 × 7 9/16″	2
5	Stretcher	3/8 × 1 3/8 × 16″	1
6	Stretcher	3/8 × 1 3/8 × 13″	2
7	Slats	3/8 × 1 5/8 × 13″	6
8	Back Rest	3/8 × 3 1/2 × 16″	1
9	Carriage Bolts .	1/4″ diam. × 2 1/2″ long	2
10	Tire Bolts	1/4″ diam. × 1 3/4″ long	2
11	Steel Washers . .	1/4″ diam.	8
12	Headless Steel Wood Screws.	1 1/4″ No. 14	2
13 14	Flat Head Wood Screws.	7/8″ No. 6	16
	Escutcheon Nails	No. 16—1″	24
15	Flat Head Wood Screws.	1 1/4″ No. 9	4

REFUGEE TABLE

The table may be constructed of any of the following woods: White pine, poplar, California redwood, birch, ash or oak. The lumber should be free from knots and other defects which would impair the usefulness of the table.

The construction is evident from the working drawing. The top should be made of at least three pieces, accurately jointed and glued, planed smooth and sanded. Pine, poplar, redwood and birch tables should be stained mahogany; oak and ash should be stained mission oak color. The staining should be followed by a coat of shellac and a coat of varnish.

BILL OF MATERIALS FOR REFUGEE TABLE

Item	Name	Size			Reqd.
		T	W	L	
1	Top	3/4″	24″	44″	1
2	Side Rail	3/4″	4 1/2″	37 1/2″	2
3	End Rail	3/4″	4 1/2″	19″	2
4	Leg	1 3/4″	1 3/4″	28 3/4″	4
5	Corner Brace . . .	3/4″	4″	5 1/2″	4
6	Block	3/4″	2″	2 1/4″	8
7	Hand Rail Screw	5/16″		4″	4
8	Washer	5/16″			4
9	Nut	5/16″			4
10	Screw	1 1/4″ No. 9, F. H. B.			8

ADJUSTABLE CURVED BOTTOM PLANE

Here is a drawing of an adjustable curved bottom plane that might prove interesting to any who wish to correlate the metal and woodworking courses. The plane is simple in design and construction, and can be made without any machine shop equipment. The plane shown was made over ten years ago by the writer, and was used while he was engaged in the pattern-making trade. It was found useful in planing core boxes of any radius of three inches or over. In the manual training school we have used it at various times for planing curved surfaces, such as phonograph covers or lids.

A pattern should be made first. After securing the casting it should be filed, and if the bottom cannot be surfaced, thru lack of equip-

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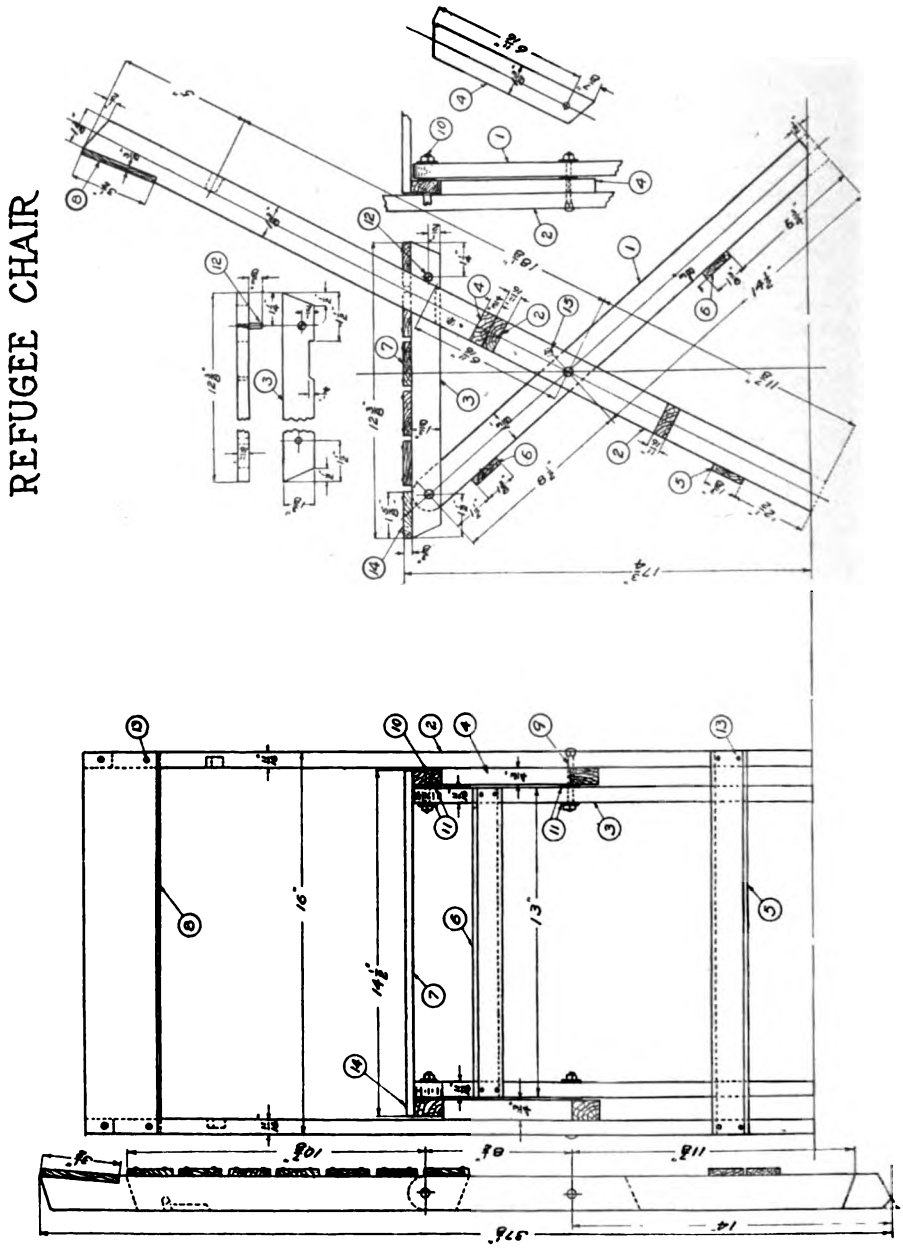
REFUGEE CHAIR



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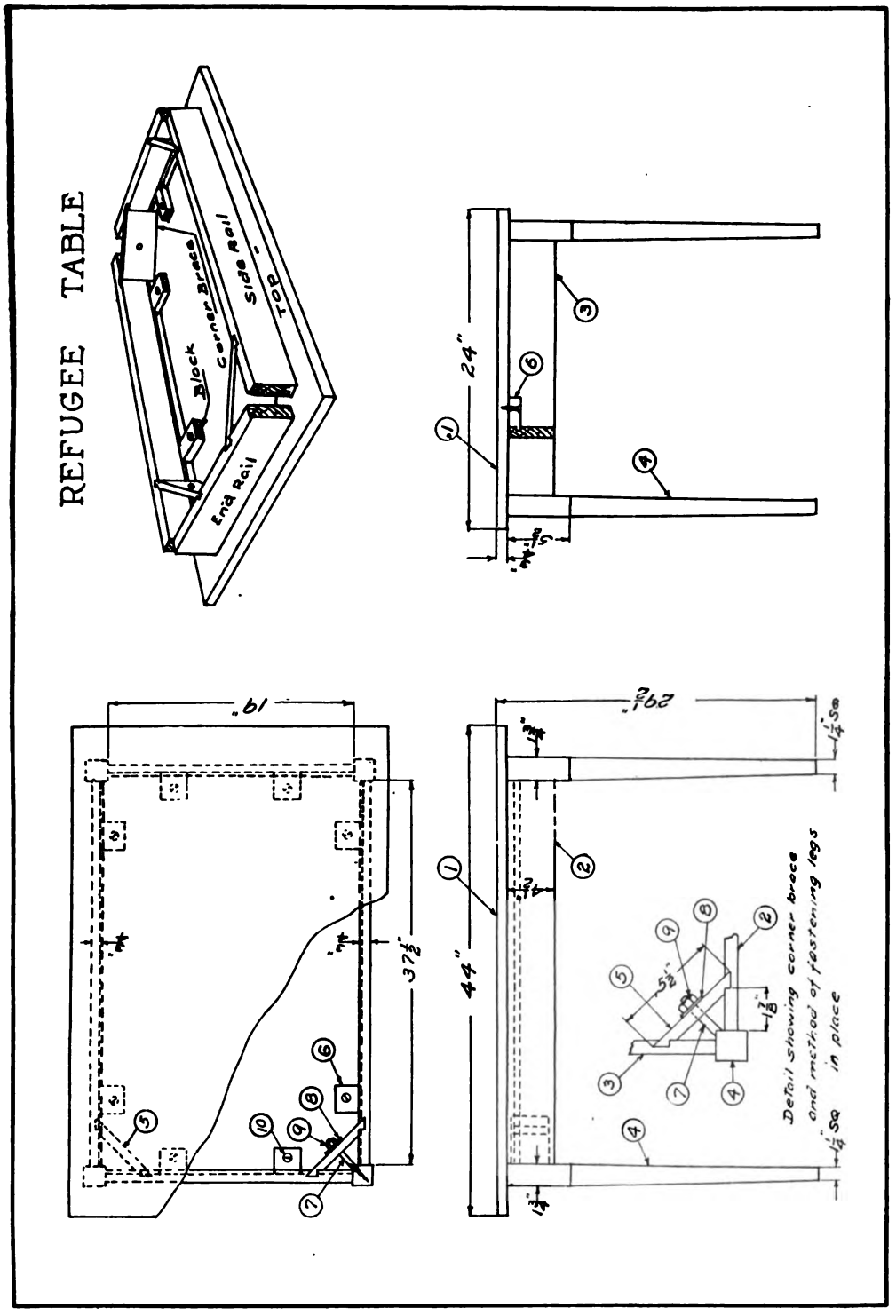

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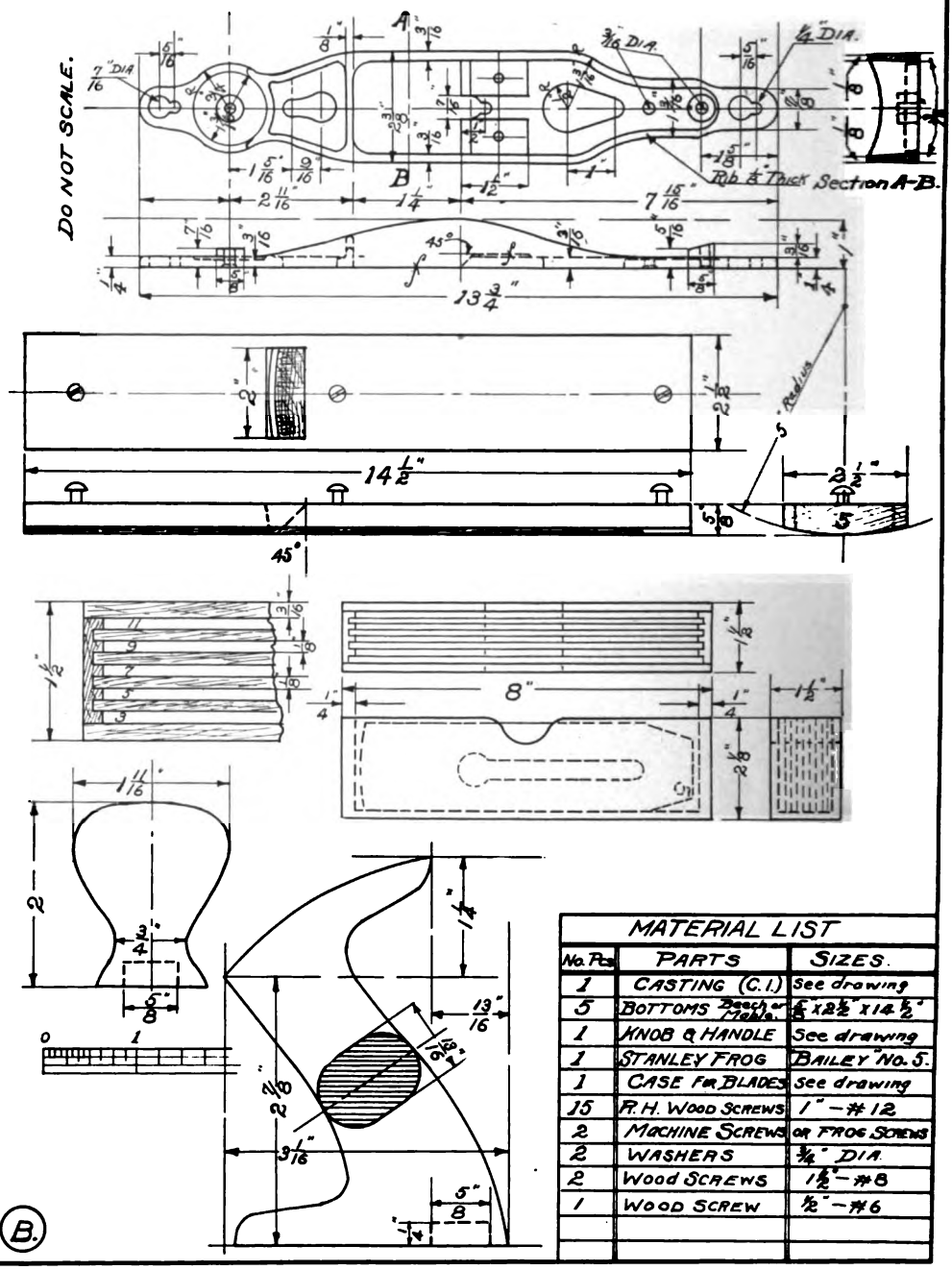
CURVED BOTTOM PLANE



MATERIAL LIST		
No. Pcs	PARTS	SIZES.
1	CASTING (C.I.)	See drawing
5	BOTTOMS Beech or Mahg.	5/8 x 2 1/2" x 14 1/2"
1	KNOB & HANDLE	See drawing
1	STANLEY FROG	BAILEY No. 5.
1	CASE FOR BLADES	See drawing
15	F.H. WOOD SCREWS	1" — #12
2	MACHINE SCREWS	OR FROG SCREWS
2	WASHERS	3/4" DIA.
2	WOOD SCREWS	1 1/2" — #8
1	WOOD SCREW	1/2" — #6

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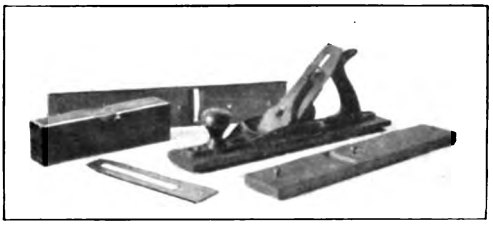
ment, it can also be filed. The 7/16" holes can be made in the pattern if desired. The smaller holes will be drilled by hand. The frog, plane iron, cap, etc., are taken from an ordinary Bailey No. 5 plane. Simply saw off the projection and file smooth. Do not use the frog of a Stanley Bed Rock plane as it will not fit. Make five wood adjustable bottoms, and fit them to the iron casting. Do this before shaping the bottom or before cutting the throat in the wood. Beech wood is the best material to use but maple will do very well. After the bottoms are made and fitted the knob and handle are attached. Set a cutter in position and extend it out far enough to scribe a pencil line near the edge to conform with the shape of the wood bottom. Then remove the cutter and grind it down to the line. Bevel off the under side and shape in the usual manner, and the plane is ready for use.

FREDERICK J. BRYANT,
Saco, Maine.

TYPEWRITER TABLES

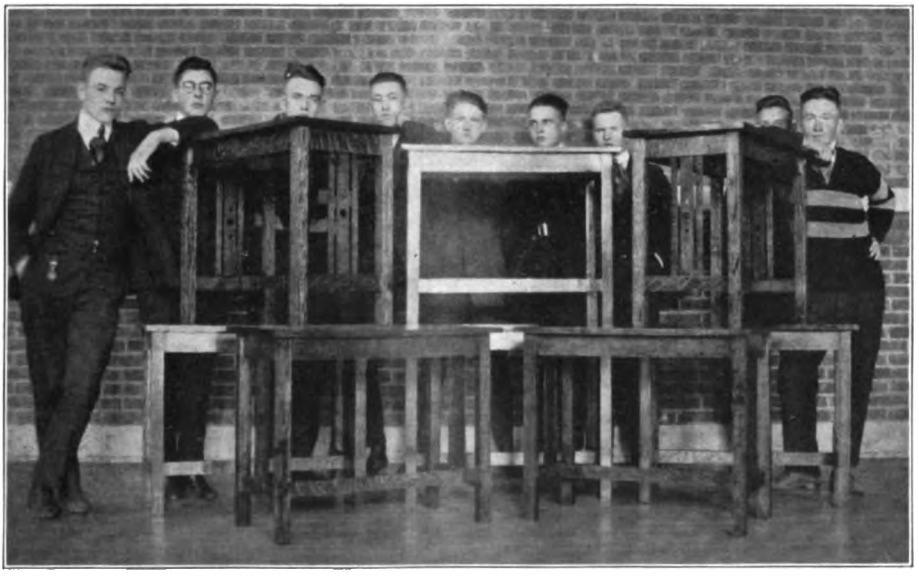
The typewriter tables shown in the accompanying photograph were made as a factory problem by boys in the Arthur Township High School. The material used was quartered white oak finished with dark stain, shellac and two coats of varnish. Each coat of shellac and varnish was rubbed with pumice and oil.



CURVED BOTTOM PLANE

Eight tables were made for the commercial department requiring approximately fifteen double-lesson periods for eleven boys. Machine methods were used, and each boy was given an opportunity to learn something of the machine on which he worked.

A. W. DRAGOO,
Arthur, Ill.



TYPEWRITER TABLES MADE AT THE ARTHUR TOWNSHIP HIGH SCHOOL, ARTHUR, ILLINOIS.

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CURRENT PUBLICATIONS

Prevocational and Industrial Arts, by Harry E. Wood and James H. Smith. Published by Atkinson, Mentzer and Company, Chicago. Size 5¾x8½ in.; 268 pages; price, $1.00.

In this book a wide range of manual arts activities is treated. The book was written with the idea of presenting the informational side of manual arts in connection with a variety of subjects and projects of an industrial character. No courses of study are suggested, and the group arrangement permits a teacher to pick out the group or groups of work of special interest and value to the students. The remaining groups may be used where possible to give additional prevocational information. Skill, however, is not to be sacrificed for content.

Woodworking processes and projects, caning, electricity, concrete work, metal work, mechanical drawing, farm projects and shoemaking receive treatment.

Essentials of Drafting, by Carl L. Svensen. Published by D. Van Nostrand Company, 25 Park Place, New York. Size, 6x9 in.; 184 pages; price, $1.50.

This is a second printing, corrected. The book is a text-book on mechanical drawing and machine drawing with chapters and problems on materials, stresses, machine construction and weight estimating.

Evening and day technical school students and students in part-time continuation schools will find this book of service. The author has followed the central idea that any drawing has one great purpose; that is to be useful. To this end lines may be added or left out, shading may be used or notes put on. When completed the drawing should have just one meaning. All of the usual phases of drafting, such as are presented to advanced high school students, are carried forward in the same straightforward manner. Considerable attention is given to elementary machine design.

The Redemption of the Disabled, by Gerrard Harris, Research Division, Federal Board for Vocational Education. Published by D. Appleton and Company, New York. Size 5¼x7¾ in.; 318 pages; price, $2.00.

The object of this book is to present, in a clear, interesting fashion, a complete account of the government's program for the economic rehabilitation of our soldiers and sailors disabled in the war. The plan of the government is that every possible means shall be utilized for restoring them to earning capacity and social usefulness. The author describes this provision in detail, including the system of Government insurance for soldiers and sailors, the compensation allowances to disabled men and their dependents, and the opportunities for vocational reeducation opened to all injured men by the Federal Vocational Rehabilitation Act. He traces the process of economic rehabilitation from its beginning in the bedside occupations and curative workshops of the hospitals, thru the choice of an occupation and the adaptation of training to individual needs, to the final placement of the reeducated man in a wage-earning pursuit.

Your Job Back Home, Edited by Joseph L. Wheeler. Published by the American Library Association, Washington, D. C. Size 6¾x10 in.

This book is illustrated with a large number of excellent photographs showing active work in a great variety of vocations. A suggestive list of books covering each group of vocations accompanies the illustrations. The book was gotten out as an aid to returned soldiers whose thoughts are now turning to home jobs. It should not only be of interest to home coming soldiers, but should also be of value to boys who are deciding on a life work.

A Laboratory Course in Physics of the Household, by Carleton John Lynde. Published by The Macmillan Company, New York. Size 5x7½ in.; 146 pages; price, 90 cents.

One of the unusual features of this book is that the laboratory work permits the use of apparatus which is familiar to the students. It is believed this feature will interest students in doing experimental work in their homes. This laboratory course is based on *Physics of the Household,* also by Lynde. It is for students of high school grade.

Elements of Plane Trigonometry, by Alfred Monroe Kenyon and Louis Ingold. Published by The Macmillan Company, New York. Size 4¾x7¾ in.; 148 pages; price, $1.00.

The authors of this book have borne in mind constantly the needs of the beginner in trigonometry, and have adapted the book to the needs of students in secondary schools and colleges.

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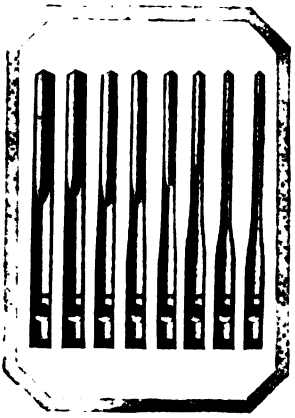
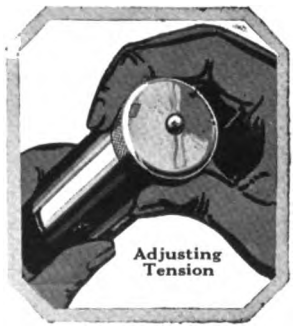
Make Better Mechanics





---------and help the best mechanics produce more and better work! Every student should be taught the special advantages of every tool in the **"YANKEE"** line.

For instance—the adjustable tension of the **"YANKEE"** No. 44 Automatic Drill really amounts to an adjustable "feed." You increase the tension for large drills in hard material; enables more pressure on the drill point.

Decrease tension for fine drills or fragile material; the drill point revolves with less pressure. Less danger of breaking drill point or harming the work.

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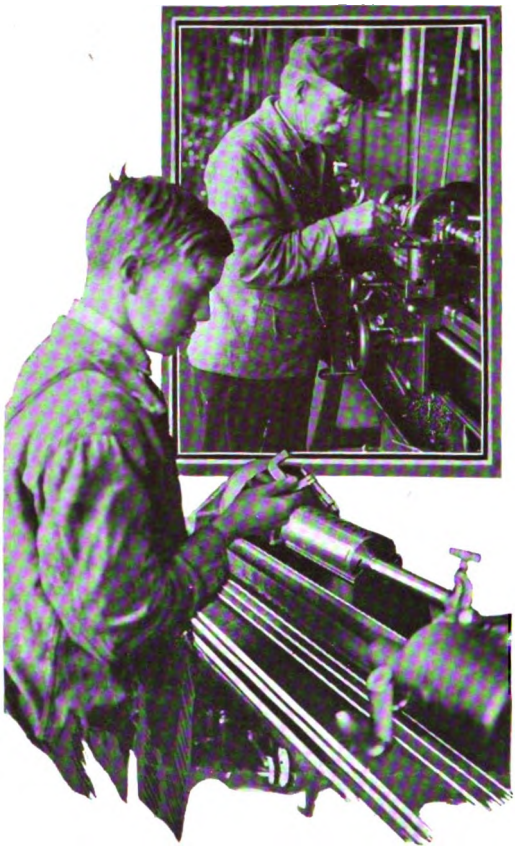

For Two Generations

Inspectors, Toolmakers, Machinists and Apprentices have pinned their faith to the accuracy of

Starrett Tools

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The L. S. Starrett Co.

The World's Greatest Toolmakers. Manufacturers of Hack Saws Unexcelled.

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42-941

FIELD NOTES

(*Continued from p. XIV.*)

ark, N. J. The building will accommodate 750 pupils and will be ready for occupancy next spring if present plans carry.

A bond issue of $150,000 to carry out a building program in Twin Falls, Idaho, has been approved. A large addition is to be built to the present high school which is to be used for a junior high school.

The 1920 annual economic prizes offered by Hart, Schaffner & Marx, Chicago, have just been announced. A first prize of $1,000 and a second prize of $500 are offered to contestants in Class A, which includes any American citizen who is not attending college. A first prize of $300 and a second prize of $200 are offered Class B contestants, who are limited to undergraduates of any American college. One of the subjects suggested is "What forms of education should be advised for the elevatoin of wage-earners from a lower to a higher industrial status in the United States?" Professor J. Laurence Laughlin, University of Chicago, is chairman of the committee of judges and will be glad to furnish further details.

Dr. Henry Suzzallo, president of the University of Washington, is about to name a man to take charge of the University of Washington extension division for business instruction which will be opened in Spokane shortly. The state university extension department is anxious to enroll not less than 150 to 200 men and women in this educational training course, which will embrace advanced courses of study in selling and business methods, advertising, merchandising, credits and accounting. The extension course in Spokane is being arranged in cooperation with the retail trade bureau and the educational committee of the chamber of commerce.

The National Education Association is urging school and college authorities to take back into the teaching corps and place upon the pay roll all teachers who are returning from military service. They urge that it be done not "as soon as a vacancy occurs," nor "at the beginning of another school year," but immediately upon their return home. There is important work to be

(*Continued on p. XX.*)

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Over 400 Schools are using "OLIVER" Wood Trimmers. The importance of the Wood Trimmer in any Wood Shop, Cabinet Shop or Pattern Shop cannot be overestimated.

OLIVER MACHINERY CO., Grand Rapids, Mich., U. S. A.

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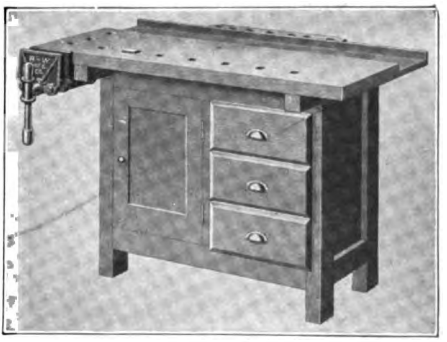
Substantial, Looks Well and is Exactly Suited to the Purpose.

These are Three Very Important Qualifications of Kewaunee Manual Training Furniture:



IT IS SUBSTANTIAL.—Kewaunee is built to serve its purpose for the life of your school.

IT LOOKS WELL—in inherent beauty of material and perfection of finish, Kewaunee easily leads.

IT IS EXACTLY SUITED to the purpose for which it is built. Therein lies the true secret of Kewaunee superiority.

We have a book that will interest school executives planning new equipment. It is free, with our compliments.

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THE seventeen leads in **Dixon's Eldorado** are most carefully graded — they are scientifically studied so as to best fit every pencil need, from the deepest shading through general use to fine line machine drawings.

DIXON'S ELDORADO
"the master drawing pencil"

To find the lead suited to your work is to have a pencil satisfaction such as you have never known. For the Eldorado leads are as finely made as they are graded. Strong, long wearing and free from grit, with an unrivalled smoothness.

We would appreciate a request from instructors for free full size samples of their favorite leads. We believe you will appreciate the Eldorado.

Please mention your dealer's name

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Established 1827
Dept. 19-J, JERSEY CITY, N. J.

There is a Dixon-Quality Pencil, Crayon, and Eraser for every purpose.

FIELD NOTES

(*Continued from p. XVIII.*)

done in every school and college which can be assigned to the returned soldier while waiting for the necessary faculty adjustments.

After more than two hours of debate the California State legislature passed, 44 to 16, a bill requiring compulsory part-time vocational education of minors in industry. It provides that employed persons under 18 shall be given at least four hours a week in the class room between 8 A. M. and 5 P. M., and that night classes shall be established in high schools to train persons under 21 who are unable to read or write English providing there are twenty such persons in the district.

Practical industrial training in the profession for which students are preparing, is being planned for those who attend the college of chemistry, University of Minnesota, next year. Alternate periods will be spent in the class room and in the authorized industries, according to L. D. Jones, dean, college of chemistry. The new plan is in cooperation with a request made by the Department of Labor to colleges throughout the United States to introduce factory training as part of their curriculums.

The Willys-Overland Co., Toledo, Ohio, have organized a factory school for the technical training and advancement of employees. Two floors of a factory building have been given over to the school. The equipment covers machine shops, tool and die rooms, drafting and lecture rooms.

Men may enter or leave the training department at any time, as the work is entirely voluntary. Old employees will be paid within 10% of their former wages while in training. The period of training varies according to the instruction necessary to fit them for advanced work and higher wages. No agreements will be required of those entering training and no age qualifications imposed.

A movement to instill in the minds of boys and girls the value of an education is being vigorously carried on in Buffalo, N. Y. Special attention is given to the students just graduating

(*Continued on p. XXII.*)

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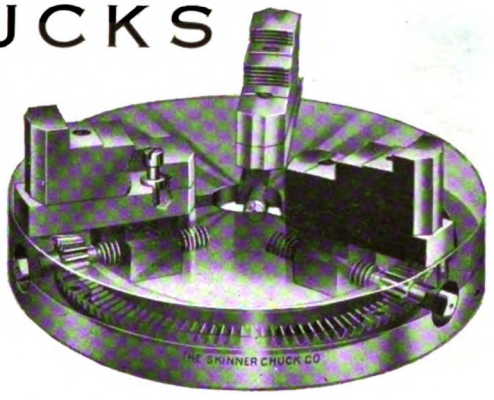
Universal "Geared Screw" Lathe

CHUCKS



These are the most accurate types of Lathe Chucks made—equipped with 2-piece reversible jaws, special gearing, having a very powerful grip.

Recommended for use where accuracy is essential.

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—every boy in grades 7-8-9—in rural, town and city schools.

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1. He may get off **with his direction established.** That is his one best hope for success.
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Does your industrial work give information on Industry and permit him to participate in its operations? Is it Prevocational? Does it assist him to decide on his future vocation—to get off the fence?

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TRADE FOUNDATIONS
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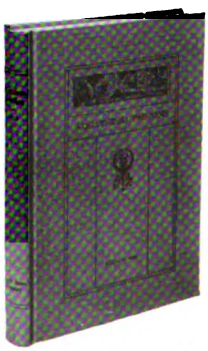

was developed to assist him in establishing his direction. Have you seen it? If not, write for an examination copy. **Make it the basis of your work in grades 7-8-9 and send your class order early. 544 pages. List 1.25. 619 illustrations.**

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is a thoro, practical, trade course, covering the recognized trade essentials of printing apprenticeship. It is readily adaptable to regular day schools, to all-day or part-time Vocational schools, to apprentice training. **243 pages. List 1.25. 176 illustrations.**

If you offer printing or are planning to install it—SEE THIS NEW TEXT.

GUY M. JONES COMPANY
Educational Publishers
Merchants Bank Building INDIANAPOLIS

FIELD NOTES

(*Continued from p. XX.*)

from the eighth grade. The special advantages offered by each particular type of high school. namely, the general and technical high schools and the vocational schools, are being stressed, and the aims of their respective courses duly set forth. "Stay in school" is the slogan, and it is being spread thru the medium of specially prepared literature as well as thru talks to the students.

The manual training department of the high school at Manitowoc, Wisconsin, has just completed a large number of commercial and sewing tables for the high school. The domestic science room and tables were redecorated in white enamel by the manual arts department. The domestic science students treated the members of the manual training department who did the work to a supper by way of showing their appreciation of what had been accomplished.

The manual arts department of Columbus, Wisconsin, recently completed sixteen drawing tables for the drawing room. The drawing tables contain space for drawing boards and drawers for instruments. These were made by the sophomore class. Gigs and industrial methods were used in getting out this work.

The Universtiy of Michigan is planning to establish educational and training courses for factory foremen. The plan contemplates six weeks' courses with sessions at 4:15 and 7:30 P. M. on alternate days. The instruction would cover the handling of men and materials and the best methods for training men for factory work. Professor George Meyers is in charge of this new development.

Davenport, Iowa, recently completed three new intermedaite schools, costing about $240,000 a piece, exclusive of equipment and furniture. Each building has about 30 rooms and will accommodate 700 pupils. Provision has been made for a room for woodwork, one for sheet metal, one for mechanical drawing and another for printing.

To remedy the scarcity of teachers in Arizona qualified to teach under the Smith-Hughes Act

(*Continued on p. XXIV.*)

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Trade Mark Registered —*E. C. SIMMONS*

Encourage the Boys to Know Good Tools

The more your pupils know about good tools, the more interested they will be in their work.

Encourage them to find out about quality and construction from every available source.

Any of the leading hardware stores will be glad to show them KEEN KUTTER tools and tell them about their many superiorities.

KEEN KUTTER tools embody every tool improvement known to the trade. They are made of the highest quality materials by skilled workmen who have devoted their lives to perfecting tool manufacture.

They are best alike for professional and beginner because they work smoothly and easily, do their work efficiently and last for years.

Every KEEN KUTTER tool bears the KEEN KUTTER trade-mark, distinctively marking it as the best of its kind that it is possible to produce.

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For general writing and sketching, use
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For delicate thin lines, maps, charts,
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Send 14c for three trial samples, mentioning degrees. Buy VENUS Pencils of any dealer.

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Indiana University

Department of Vocational Education

SUMMER SESSION 1919

Courses for teachers in vocational schools will be given at Indianapolis from June 23rd to August 1st.

Courses in Industrial Arts and Vocational Education will be given at Bloomington, Indiana, from June 12th to August 8th.

For further information write

PROFESSOR EDWIN A. LEE
Indiana University
BLOOMINGTON, INDIANA

FIELD NOTES

(*Continued from p. XXII.*)

a summer school of teacher training will be held at Bisbee under the State department of vocational education, opening June 30.

At the recent Cleveland meeting of the Ohio Teachers' Association a resolution was unanimously adopted which advocated making manual training a requirement for all teachers.

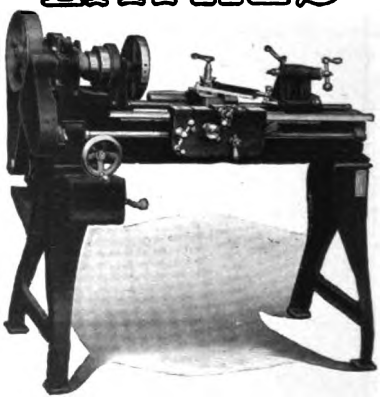
The school authorities and the Chamber of Commerce in Waltham, Mass., are investigating the advisability of establishing a trade school in that city.

Last September the industries of Lima, Ohio, subscribed $13,070 for the purchase of machine shop and foundry equipment for vocational training in the public schools. Of this amount $5,560 has been paid into the school fund.

Ralph Page, instructor in manual training in the high school at Mankato, Minn., has accepted a position in Detroit for the coming year. He had previously taught in Detroit for three years. Mr. Page is a graduate of Stout Institute.

Miss Elizabeth P. Allan, of Omaha, Nebraska, has been appointed reconstruction aide in occupational therapy at United States General Hospital No. 29, Fort Snelling, Minnesota.

SEBASTIAN LATHES



10, 13, 15 in. swing
Any type. *Write for catalogue.*
The Sebastian Lathe Co.
152 Culvert Street **CINCINNATI, O., U. S. A.**

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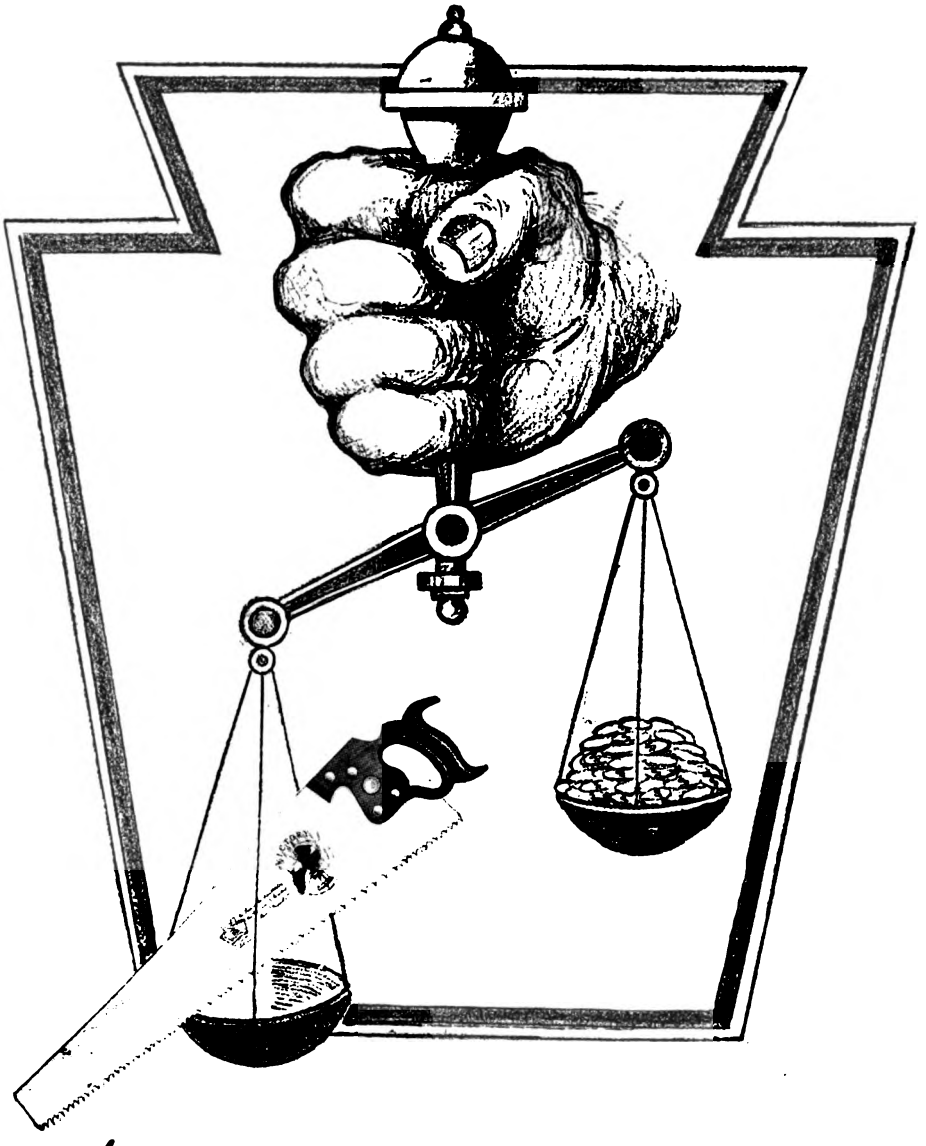

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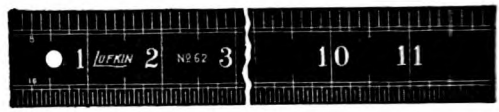

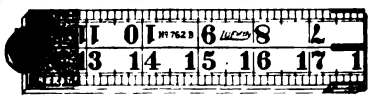

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Just issued—a little catalogue of 31 pages entitled "TOOL OUTFITS AND BENCHES FOR HOME AND SCHOOL USE." If interested please mention Catalog No. 191.

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JUST A FEW OF OUR HAMMERS

All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request.

THE DAVID MAYDOLE HAMMER CO. NORWICH, N.Y.

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TRADE NOTES

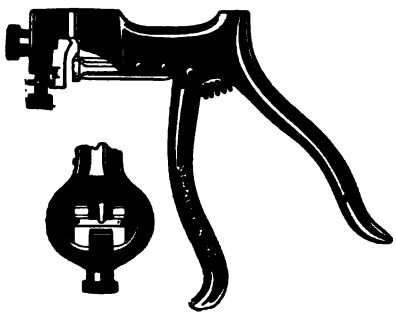
One does not have to be much of a mechanic to enjoy looking thru the illustrated catalogs of machinery that are freely distributed these days. Every new catalog that comes seems to suggest a new place to buy what we have been wanting or some new thing never seen before. A good example of such a catalog is "General Catalog, No. 195" issued by the B. F. Sturtevant Co., of Boston. It is entitled "Sturtevant Products." For twenty-five years we have known of Sturtevant fans and blowers and the Sturtevant forges. We have known of the Sturtevant Company as heating and ventilating experts, but we didn't know before that this company makes gasoline electric generating sets in just the right sizes for manual training shops remote from public service electric plants. These are in three sizes: 8½, 16, and 24 horse power. It is not even necessary to use gasoline; kerosene will do, or illuminating gas. Such a compact little plant would be a boon to many a shop teacher.

Under the title "The Selection and Operation of Woodworking Machinery for Vocational, Industrial and Manual Training Schools," the catalog of J. A. Fay & Egan Co., Cincinnati, illustrates and describes their entire line of woodworking machinery. Illustrations of interiors of many school shops equipped with Fay & Egan machines, and also views of the exteriors of quite a number of the best known institutions, constitute an especially interesting feature of the catalog. Their No. 400 Manual Training Lathe has proved very popular with schools, the Boston Tech having equipped their lathe room with thirty-three of these machines. In fact, this particular model is described as a "Boston Tech Model." It can be furnished with variable speed motor head stock for either direct or alternating current. An illustration is shown in their advertisement on p. XI.

The latest addition to the J. D. Wallace & Co. line is their new Bench Saw. This machine has many distinguishing features. It is portable, quickly and accurately adjusted, and is so constructed that the saw tilts instead of the table. The saw is equipped with a shutter saw-guard which is built into the machine and protects the operator's hand as the stock passes thru the ma-

(*Continued on p. XXVIII.*)

Stanley Tools



Stanley "Pistol Grip" Adjustable Saw Set No. 42

Of Special Interest to Manual Training Schools

This Saw Set embodies several unique and important features not heretofore seen in tools of this description.

The shape of the Body and Handle enables the user to operate the tool with great ease and with the least possible exertion, and the Saw is held firmly against the gauge while the tooth is being set.

It can be readily adjusted by means of the knurled thumb screw to give a greater or less set to the teeth of the saw, according as the saw is to be used for coarse or fine work. As the anvil or part against which the plunger works is graduated, the same adjustment can be easily obtained for duplicate work.

The tool is so designed that the saw teeth are in plain view which enables the user to quickly adjust the tool to the tooth to be set.

The plunger and anvil are made of tool steel—hardened and tempered. All parts are carefully machined and are interchangeable.

The tool is given a fine black finish.

STANLEY RULE & LEVEL CO.
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More than ever before, the manual training courses of schools and colleges are teaching modern mechanics. The well-trained mechanics must know how to weld metalssuccessfully, therefore every manual training department should be given the best equipment possib'e—

ImperialWelding and Cutting Equipment

Economical, Efficient, Safe, Speedy and Durable. Portable and always ready for use. Welds anything in metal and cuts everything in wrought iron and steel.

Free Copy of the Imperial Hand Book containing complete data as to cost of operation and views of work, will be sent Manual Training Instructors on request.

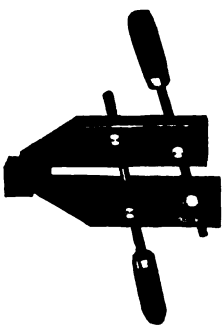
Imperial Brass Manufacturing Co.
511 S. Racine Ave., Chicago

Tools for Sheet Metal Work

Manual training, vocational and technical schools are invited to communicate with us regarding equipment of shops for sheet metal work, the importance of which is constantly increasing, owing to the popularity of sheet metal as a substitute for other materials.

Ask for catalog M T 50.

NIAGARA MACHINE AND TOOL WORKS
BUFFALO, N. Y.
Manufacturers of
MACHINERY FOR WORKING SHEET METALS



"Jorgensen"

Teach your pupils with the tools they will find in the most efficient shops. "JORGENSEN" Clamps are the standard.

Steel Spindles
Steel Nuts
Hard Maple Jaws

Adjustable Clamp Co.
216 N. Jefferson St.
CHICAGO

TRADE NOTES

(*Continued from p. XXVII.*)

chine; it also prevents the tail end of the stock from catching in the rear end of the saw.

This firm also manufactures the Wallace Bench Planer which is quite well known to shop teachers. They make a very generous offer to schools whereby no risk is taken in buying any of their machines. Upon request they will ship a machine for fifteen days' trial. If at the end of that time, the shop teacher is not satisfied with it the machine can be returned. Very interesting circulars of these machines will be sent on request to J. D. Wallace & Co., 1408 W. Jackson Blvd., Chicago, Ill.

The advertising pages of this issue introduce to our readers a firm that has done very little direct advertising in our field, tho their goods are becoming widely known among the schools. J. H. Williams & Co., Brooklyn N. Y., manufacture iron, steel, copper, bronze and aluminum drop forgings, in addition to their well-known "Agrippa" tool holders which cover a large variety. Their entire line of holders are drop-forged from a strong, tough grade of carefully selected steel, are submitted to a special heat-treatment or refining process after forging, which develops resistance to wear. Their catalog is pocket-size and copies will be sent on request.

Everybody likes to see genuine samples of anything which they wish to purchase, if they can't see large areas. To meet just this desire on the part of woodworking teachers, S. C. Johnson & Son, Racine, Wis., have prepared for distribution a portfolio containing small pieces of quartered oak, plain oak, Southern pine, birch, cypress, maple, and gumwood which have been stained with Johnson's Wood Dyes. The portfolio also contains a description of all their wood finishing materials and directions for using them. It is compact and fills the need very well indeed. Although each one costs the firm nearly $1.00, they are distributed free to manual training schools.

On April 9, Henry Disston & Sons, Philadelphia, opened a cafeteria for their employes. This in itself may not be such an innovation; but when it is known that a beautiful new brick

(*Continued on p. XXX.*)

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"The Book of Knowledge and Nature,
Has a Wonderful Story to Tell You!"

at the VICTORY CONVENTION of the NATIONAL EDUCATION ASSOCIATION

OF THE UNITED STATES AT MILWAUKEE, JUNE 28th TO JULY 5th —the time of the year when fair Milwaukee favored by Nature flowers with all her summer glories—Milwaukee the beauty spot of America!

—to become the Mecca for teachers, gathering from every nook and corner of this great country!

Milwaukee, in sight of Lake Michigan—with 40 inland watering places within 20 minutes ride. Wisconsin, with 6,000 lakes, the vacation Paradise.

Principal sessions and headquarters in finest Auditorium building in the world. Hotel and housing accommodations adequate and of the best.

The Finest Convention Building in America

Convenient railroad and boat connections to every part of the United States.

When the world's noted educators journey to Milwaukee—PLAN NOW ON BEING THERE! Spend a pleasant body-resting vacation at Milwaukee—reap a harvest of knowledge as well!

SEE MILWAUKEE'S $10,000 "PAGEANT OF THE FLAG" ON THE FOURTH

For full particulars write NOW to— MILWAUKEE BUREAU

NATIONAL EDUCATION ASSOCIATION

Milwaukee Association of Commerce

WARREN B. BULLOCK, Executive Sec'y **Athletic Club Building, Milwaukee, Wis.**

Manual Arts School Equipment

Benches, Tools, Supplies
Jewelers' Tools and Supplies

We are agents for the **Rose Hammers** and **Anvils** for **Copper Work** and are specialists in the complete **Tool Outfitting of Manual Training Schools.**

Send for our new Illustrated Catalogue and allow us to quote you on your requirements.

Belcher & Loomis Hardware Co.

Providence, Rhode Island

V. & B. TOOLS

A Complete Line of

Hammers - Anvil Tools - Tongs

NAIL HAMMER

Every V. & B. Tool is individually tempered and tested.

Write for complete catalogue and Blue Print circular of hammers.

Vaughan & Bushnell Mfg. Co.

Makers of Fine Tools

CHICAGO

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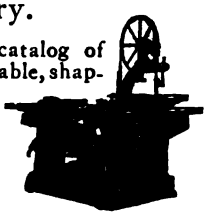
Crescent Wood Working Machines

are the tools your students will eventually use so give them the opportunity now of learning about this splendid line of wood working machinery.

Send today for our catalog of band saws, jointers, saw table, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinders, borers, hollow chisel mortisers, Universal wood workers.



The Crescent Machine Co.

46 CHERRY ST. LEETONIA, OHIO

POST'S

STUDIO DRAWING STAND

of Par Excellence

The top can be rotated in a complete circle while set at any angle.

Also we can recommend the **Polytechnic Illustrator Victor Stands**

THE FREDERICK POST CO.

Manufacturers - Chicago

San Francisco Cal. **Portland Ore.**

TRADE NOTES

(*Continued from p. XXVIII.*)

building, covering 14,400 square feet, accommodating about 900 people and having up-to-the minute kitchen facilities to prepare 1500 meals at one time (which number could be doubled in two sittings), it becomes a matter of more than passing interest. A little booklet entitled "The Disston Cafeteria," which was prepared for distribution among the employes, contains a message from Frank Disston, the president, that illustrates the fine spirit existing between this firm and their employes. The cafeteria is not intended to earn a profit or even pay interest on the capital invested.

The Joseph Dixon Crucible Company, Jersey City, N. J., announces the removal of their Philadelphia sales office from 1020 Arch Street to Rooms 801 and 802 Finance Building. This removal from a store to an office building is also a change in policy; since large stocks of Dixon's pencils and graphite products are carried by the Philadelphia trade, the firm will allow these channels to care for the local demands more largely hereafter.

The Oliver Machinery Co., Grand Rapids, Mich., have ready for distribution circulars giving a complete description of their New Universal Motor Drive for Shapers. The illustrations and description are as nearly perfect as the printer's art can produce. They will forward a copy to anyone interested.

The Industrial Book & Equipment Co., Indianapolis, announce that they are in position to fill out of stock orders for equipment for wood and metalworking, domestic science, sewing, forging and cabinet hardware. This firm also publishes texts for these lines of school work.

F. K. Phillips, manager of the educational department of the American Type Founders Company, reports very encouraging sales prospects for the coming school-buying season. No phase of school shop work has so many attractive features as printing. In addition it rounds out a pupil in other school subjects, particularly English, hence its growing popularity.

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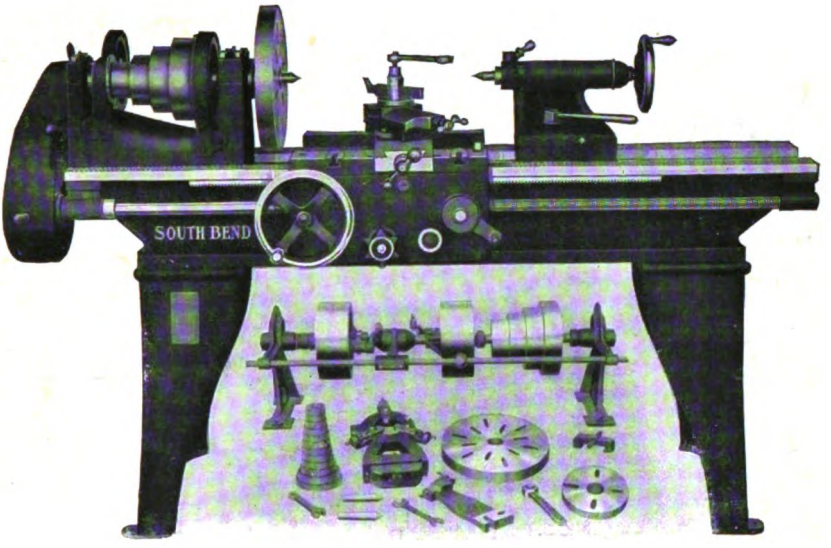
SOUTH BEND LATHES



The 15 in. x 6 ft. Lathe illustrated above is the most practical size for the School Shop.

20,000 South Bend Lathes are in use in manufacturing, in the general machine shop, and in industrial work throughout the world. The lathe that is practical in commercial industry is also practical for the school machine shop.

Send for book entitled

"Machine Shop Equipment for Vocational and Industrial Schools"

which shows the interior views of some practical school machine shops.

THIS BOOK IS FREE TO EDUCATORS

Revised edition of book

"How to Run a Lathe"

postpaid. No charge to shop instructors.

NEW CATALOG No. 57 FREE TO ANY ADDRESS

SOUTH BEND LATHE WORKS

426 E. Madison Street **South Bend, Indiana**

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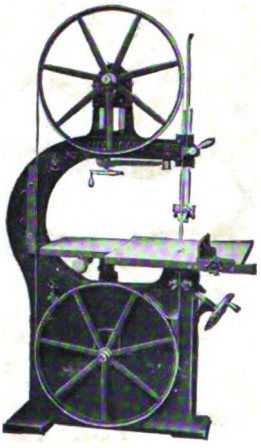
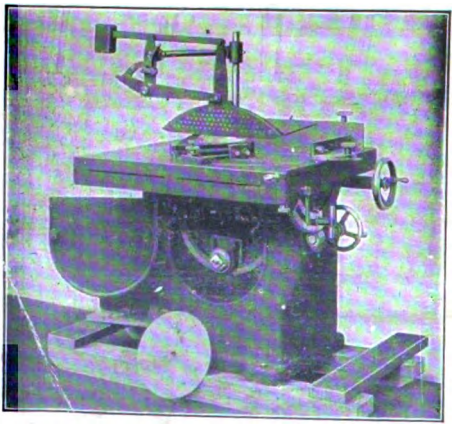
American 12-inch Speed Lathe
(A. C. Headblock)



American 30-inch Band Saw
(Direct Attached Motor)



American No. 20 Saw Bench
(Patent Automatic Guard)

Consider the Activity of Cabinet Making

It Is Profitable

A FEW years ago the Board of Education of Rochester, N. Y., organized an elementary Vocational School. **"American"** Woodworking Machinery costing $850 was installed.

In 1912 a group of pupils turned out on those machines **School** furniture worth $2900.

Since 1912 a tool has been added from time to time as the need for it arose until now there is in the Rochester Public Schools a complete equipment of **"American"** Woodworking Machines for Cabinet Making.

In 1917 there was turned out on these machines furniture valued at $13,800. The tools have paid for themselves many times over.

Pupils from the sixth, seventh and eighth grades operate the machines **safely** and efficiently because the cutting mechanism is properly guarded.

Buffalo, New York, Jersey City, New Jersey, Winnipeg, Canada, and a hundred other cities are doing the same thing. May we tell you how you may make **"American"** machines pay for themselves in **your** schools?

American Wood Working Machinery Co.

591 Lyell Avenue **Rochester, N.Y.**

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